REPORT RESUMES

ED 003 780 64

THE CONTENT AND PATTERN FOR THE PROFESSIONAL TRAINING OF AUDIOVISUAL COMMUNICATION SPECIALISTS.

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REPORT NUMBER NDEA-VIIB-208 PUB DATE FEB 64
CONTRACT OEC-2-16-029
EDRS PRICE MF-$0.27 HC-$5.32 133P.

DESCRIPTORS- *TRAINING, PROFESSIONAL EDUCATION, *MEDIA SPECIALISTS, *AUDIOVISUAL COMMUNICATION, *CURRICULUM DEVELOPMENT, CURRICULUM PLANNING, *SEMINARS, COMMUNICATIONS, EDUCATIONAL NEEDS, INSERVICE TEACHER EDUCATION, PRESERVICE EDUCATION, HAYWARD, CALIFORNIA

A SERIES OF THREE SEMINARS WAS HELD TO DISCUSS THE PRESERVICE AND INSERVICE TRAINING OF COMMUNICATION SPECIALISTS IN EDUCATIONAL MEDIA. SOME OF THE SPECIFIC AREAS OF TRAINING DISCUSSED WERE (1) AUDIOVISUAL MATERIAL PREPARATION, (2) ADMINISTRATIVE PREPARATION, (3) SYSTEMS ENGINEERING EDUCATION, (4) INSTRUCTIONAL PROGRAMING, (5) LEARNING THEORY, (6) LIBRARY EDUCATION, (7) FILM PRODUCTION, AND (8) EDUCATIONAL TELEVISION TRAINING. THE 36 SEMINAR PARTICIPANTS DID NOT ACHIEVE A CONSENSUS ON THE PROPER CONTENT OR PATTERN FOR A TRAINING PROGRAM. (JH)

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U. S. DEPARTMENT OF HEALTH, EDUCATION AND WELFARE
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CALIFORNIA STATE COLLEGE AT HAYWARD

Hayward, California

February, 1964

THE CONTENT AND PATTERN FOR THE PROFESSIONAL TRAINING OF AUDIOVISUAL COMMUNICATION SPECIALISTS

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Principal Investigator: Robert O. Hall

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The final report of a project, No. OE 2-16-029, of the Educational Media Branch of the Office of Education, U. S. Department of Health, Education, and Welfare, as part of Title VII, National Defense Education Act, of 1958.

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B-208

TABLE OF CONTENTS

Part

BACKGROUND OF THE PROJECT I

INTRODUCTION . . . . I - A

ADVISORY BOARD . . . . I - B

PARTICIPANTS IN SEMINAR I . . . . I - C

PARTICIPANTS IN SEMINAR II . . . . I - D

PARTICIPANTS IN SEMINAR III . . . . I - E

THE WORKING PAPERS II

A POINT OF VIEW . . . . II - A

PAPER I - SOME PROPOSALS WITH REGARD TO THE PROFESSIONAL PREPARATION OF EDUCATIONAL MEDIA PERSONNEL -- JAMES W. BROWN . . . . II - B

PAPER II - THE INCLUSION OF WORK IN THE PREPARATION OF A-V MATERIALS IN THE TRAINING OF FUTURE EDUCATIONAL MEDIA OR A-V SPECIALISTS -- MALCOLM FLEMING . . . . II - C

PAPER III - THE ADMINISTRATIVE PREPARATION OF EDUCATIONAL MEDIA SPECIALISTS -- CHARLES F. SCHULLER . . . . II - D

PAPER IV - A "COMMUNICATION APPROACH" -- GEORGE GERBNER II - E

PAPER V - SYSTEMS ENGINEERING IN THE EDUCATIONAL ENVIRONMENT -- LEONARD C. SILVERN . . . . II - F

PAPER VI - IMPLICATIONS OF PROGRAMMED INSTRUCTION FOR THE TRAINING AND FUNCTION OF THE AUDIOVISUAL SPECIALIST -- LAWRENCE M. STOLUROW . . . . II - G

PAPER VII - THE PLACE OF LEARNING THEORY IN THE GRADUATE TRAINING OF AUDIOVISUAL COMMUNICATION SPECIALISTS -- KENNETH NORBERG . . . . II - H

PAPER VIII - STATUS STUDY OF PROFESSIONAL EDUCATION PROGRAMS FOR AUDIOVISUAL OR EDUCATIONAL MEDIA SPECIALISTS -- CHARLES W. WORLAND . . . . II - I

PAPER IX - EDUCATION FOR LIBRARIANSHIP RE NEW MEDIA -- CAROLYN I. WHITENACK . . . . II - J

PAPER X - EDUCATION AND TRAINING OF THE FILM PRODUCTION SPECIALIST -- JOHN H. MORIARITY . . . . II - K

PAPER XI - THE PREPARATION OF THE EDUCATIONAL TELEVISION SPECIALIST -- WARREN F. SEIBERT . . . . II - L

PAPER XII - ENTRY INTO THE PROFESSION BY THE AUDIOVISUAL (EDUCATION MEDIA) SPECIALIST -- FRED F. HARCLEROAD II - M

THE SEMINARS III

LIMITING THE PROBLEM . . . . III - A

REACTIONS TO THE WORKING PAPERS . . . . III - B

AREAS OF CONTINUING CONCERN . . . . III - C

CONCLUSIONS AND RECOMMENDATIONS . . . . III - D

PART I

BACKGROUND OF THE PROJECT

INTRODUCTION

THE ADVISORY BOARD

PARTICIPANTS - SEMINAR I

PARTICIPANTS - SEMINAR II

PARTICIPANTS - SEMINAR III

PART I - A

BACKGROUND OF THE PROJECT

INTRODUCTION

In March of 1960 a group of 32 people gathered at the annual convention of the Department of Audiovisual Instruction in Cincinnati to discuss the education of the Audiovisual Communication specialist. This was a "closed" seminar called by a small group of directors of larger training programs in certain colleges and universities. It was occasioned by the growing recognition of the need for audiovisual-educational media specialists in an increasingly technologically oriented culture. It was not the intention of this 1960 seminar to develop a crash program, but to examine the common concerns and problems facing educators responsible for the training of persons entering this growing field of specialization in education. The proceedings of this seminar were reported in Supplement 2 of the AUDIO-VISUAL COMMUNICATION REVIEW, edited by Fred F. Harcleroad. The single most important outcome of the seminar was a commitment on the part of the participants that a further, and hopefully continuing, study would be made of the program of education for the audiovisual-communications specialist.

The current grant is an attempt to pursue certain of the concerns expressed at the Cincinnati Seminar. The proposal outlined a plan for holding three seminars designed to deal with the question of the content and pattern of pre-service and in-service training of the educational media audiovisual communication specialist. Funds for the project were allocated in June, 1962.

Under the provisions of the grant, an Advisory Committee of 10 was appointed to give direction to the Project staff to the conduct of the seminars. The Advisory Committee was composed of outstanding specialists in the area of Psychology, Communications, Audiovisual, Radio, Television, Graphic communication and Teacher Education.

The Advisory Committee helped formulate the list of the seminar participants. The personnel of each seminar was selected on the basis of the following criteria. The participant should:

...be able to make a significant contribution to the problem under discussion. Should be thoughtful and able to express his ideas as a member of a group.

...have demonstrated competence in one or more of the areas relating to educational media.

...be currently functioning as an educational or audio-visual specialist.

...be perceptive in analyzing his own needs and the effectiveness of the training program through which he came.

The Advisory Committee also helped prepare the topics for the working papers and suggested possible authorities to prepare the papers. These papers are reproduced as Part II of this report.

Each seminar concentrated on a particular aspect of the total program.

Seminar I - training of persons with responsibility for major theoretical programs and administrative responsibility.

Seminar II - training of persons with the responsibility for service centers - district and college level - who may also have responsibility for training of educational media personnel.

Seminar III - the pre-service training of educational media or audiovisual specialist to assume responsibility at the beginning level of the profession-

...in a single school or small production unit

...in a large school system or a subordinate position on a larger production staff

The participants of the several seminars were all either responsible for training programs or the recent product of training programs, therefore, the spirit of the seminars was one of intense self-evaluation commitment and concern.

The commitment of the seminar participants to the problem at hand was ideally summarized by Richard Goggin when he commented:

> "I come here with much to learn as well as to give . . . At New York University we have been involved in a detailed analysis of where we are and where we should go. We are trying to identify (1) a philosophy of communications, (2) a curriculum for implementation of this philosophy and (3) the kind of person we would like to come from our program."

It fell to the Project Staff, and primarily to the Principal Investigator, to prepare this final report. Inevitably this report reflects the staff's view of the major themes, principal conjectures and conclusions reached by the seminars. Those conclusions, set forth in Part III of this report, are those of the Project Staff as they synthesized and reconciled the concerns of the seminars. In drafting this document, the staff has made liberal use without always assigning authorship, of ideas of the position papers and transcripts of the proceedings of the seminars.

In a very real sense, the most important result of the seminars cannot be documented in a report. The values which accrue from bringing together the persons responsible for the major training programs to share ideas and concerns for the direction in which the training programs should move may be personal and intangible. Indeed, it was understood when the seminars were proposed that there might not be concurrence on the most appropriate scope and sequence for the training program. But the opportunity to meet and discuss the several programs might be useful in breaking the parochial boundaries which surround each program at the present time.

This opportunity for face to face communication and sharing could not have happened except for the help of Dr. Walter Stone, Dr. Seth Spaulding, and Dr. Gerald Torkelson (during their respective tenure as responsibility *for Title VII, Part B projects) in funding and* implementing this contract.

Many of the ideas which emerged from the seminars have been documented elsewhere in the literature of the field. It was not the intention of this report to recreate this documentation. It is assumed that responsible people in charge of training programs will know or have access to this literature. It is the intent of this report of the seminars to present the basic working papers together with a summary of the ideas and concerns of the seminar participants as seen through the eyes of the Project Staff.

PART I - B

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The meeting of the Advisory Board was held on December 13 and 14, 1962 at the Hyatt House, Burlingame, California. The meeting was chaired by Robert Hall, Director, Division of Learning Resources, California State College at Hayward.

PART I - C

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The meeting of Seminar I was held on April 4 and 5, 1963 at the Hyatt House Hotel, Burlingame, California. The meeting was chaired by Fred Harcleroad, President, California State College at Hayward.

PART I - D

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The meeting of Seminar II was held on April 4 and 5, 1963 at the Hyatt House Hotel, Burlingame, California. The meeting was chaired by Robert Hall, Director, Division of Learning Resources, California State College at Hayward.

PART I - E

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The meeting of Seminar III was held on April 21 and 22, 1963 at the Premier Motor Hotel, Denver, Colorado. The meeting was chaired by Robert Hall, Director, Division of Learning Resources, California State College at Hayward.

PART II

THE WORKING PAPERS

A POINT OF VIEW

SOME PROPOSALS WITH REGARD TO THE PROFESSIONAL PREPARATION OF EDUCATIONAL MEDIA PERSONNEL -- JAMES W. BROWN

THE INCLUSION OF WORK IN THE PREPARATION OF A-V MATERIALS IN THE TRAINING OF FUTURE EDUCATIONAL MEDIA OR A-V SPECIALISTS -- MALCOLM FLEMING.

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EDUCATION AND TRAINING OF THE FILM PRODUCTION SPECIALIST -- JOHN H. MORIARITY

THE PREPARATION OF THE EDUCATIONAL TELEVISION SPECIALIST -- WARREN F. SEIBERT

PART II - A-

THE WORKING PAPERS

A POINT OF VIEW

A crucial question facing the Project staff was the best use to be made of the time and experience of the seminar participants. It was decided that the participants might function more efficiently if they had had an opportunity to read and study a series of "position papers" concerned with the major problems confronting the seminar. The Advisory Committee, therefore, helped draft a series of titles and suggested authors for these papers. The papers were prepared and distributed ahead of the actual seminar.

It was the purpose of these papers to provide a statement of position to which the participants could react. The papers were not to be research documents but rather a statement of position, which from the author's point of view, would make clear the following:

1. The author's suggestion about the ideas which an educational media specialist must know, be aware of, and handle at three levels -- a) the point of entry, b) the operational level of a program, and c) the theoretical level of graduate instruction and large system management.
2. The author's best perceptions as to how these ideas, skills, and knowledge can best be organized in an appropriate scope and sequence in a formal training program.
3. The author's suggestion on what such a formal training program would need by way of support in facilities and personnel.

It was the hope of the project staff and the Advisory Committee that these position papers would not only be background for the seminar participants but useful on a wider base after the completion of the project.

PART II - B

SOME PROPOSALS WITH REGARD TO THE PROFESSIONAL PREPARATION OF EDUCATIONAL MEDIA PERSONNEL

James W. Brown
San Jose State College

This paper is based on the view that it is more rational here to think and talk about "educational media" than to continue the dichotomies of "print and non-print," book and audio-visual," or "new and traditional".

It is also based on the view that while there is need for the integral consideration of educational media there is a further point to recognizing that those who work with such media do so with varying degrees of specialization and at different levels of responsibility.[1]

Four categorized levels of the performance of media functions will be recognized here: (1) the single school level, (2) the district or county level, (3) the college or university level, and (4) the major university, the latter being distinguished from the third level by its emphasis upon research and the refinement and extension of theoretical bases for educational media and media programs.

At each of these four levels we may expect to find "generalists" and "specialists," the former in over-all charge aided by the latter who contribute expertly to particular segments of total educational media programs.

RESPONSIBILITIES OF MEDIA GENERALISTS

While the generalists to whom we have referred may also function temporarily as specialists (particularly during their period of preparing for generalist responsibilities), the reverse situation would not be expected. The generalist should serve as the director, coordinator, or manager of an educational media agency or activity. When he does, he works closely with and generally directly under the administrator responsible for coordinating all curriculum and instruction. Thus, the media generalist may be an assistant principal (responsible to a principal of a school), an assistant superintendent (responsible to an associate superintendent in charge of curriculum and instruction) or, a division head or dean (responsible to an academic vice president).

In carrying out his responsibilities, the educational media generalist will be expected:

(1) To assess continuously the desirability and feasibility of applying the efficiencies of technology and systematized planning to problems of teaching and learning, with due regard to the over-all curricular organization involved;

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[1] It will be recognized that many of the points pertaining to the structure and functions of educational media programs outlined here are based on more general analyses expressed in "The Function of Media in the Public Schools" (Editor, Barry Morris), Audiovisual Instruction, vol. 8, January, 1963, pp. 9-14.

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(2) To organize logistical aspects of educational media so as to facilitate uses by teachers and students which are properly related, varied, timed, located, and presented;

(3) To organize informational aspects of educational media so as to assist teachers and students in locating and obtaining the best media for the purposes intended;

(4) To establish conditions calculated to stimulate and motivate professional personnel (classroom teachers, for example) to make functionally appropriate uses of various educational media in carrying out their responsibilities;

(5) To evaluate effects of the uses of educational media and the desirability or undesirability of certain logistical arrangements with respect to those media in the conduct of the teaching-learning enterprise; and

(6) To effect or recommend changes justified by the results of such analyses.

RESPONSIBILITIES OF MEDIA SPECIALISTS

It is also expected that several kinds of college-educated specialists will be needed for educational media programs at each of the four levels of service previously indentified. Their separate responsibilities may be carried out under such various job titles, among others, as audio-visual coordinator, librarian, photographer, graphic artist, programmer, writer, distribution coordinator, cataloger, business manager, materials evaluator, television or radio producer, field services or staff development supervisor, recordist, equipment and installation engineer, or educational (inventive) engineer.

While each of these individuals will have certain specialized functional responsibilities inherently related to his job title and be expected to have expert capabilities in them, he must recognize and appreciate the proper relationships of that specialty to the total educational effort of the agency to which he is attached. It is this recognition which should protect him against unnecessary or uncalled-for "deep end" commitments, unthinking decisions, or hortatory nonsense. It should also provide a basis for guiding his move toward "generalized" preparation and his gradual assumption of broader "generalist" responsibilities for educational media programs.

The educational media specialist will thus be expected:

(1) To assess continuously the desirability and feasibility of applying his specialty to the total educational effort;

(2) To explore in depth (through reading, introspection, experimenting or other appropriate means) the specialty he represents, seeking to find means of improving and extending the specialty's applicability to educational needs.

MEDIA FUNCTIONS AT FOUR SERVICE LEVELS

The curriculum discussed in the pages following assumes an organizational pattern for media functions at each of four service levels (single school, district or county, college, and major university -- the latter with a theoretical emphasis) somewhat as outlined below. Although it is important, no special attention is given here to the preparation of educational media personnel for non-educational agencies.

The Single School

Within every single school -- elementary, secondary, or junior college -- there should be a comprehensive educational media center which includes some of the following materials, equipment, and services. The scope and complexity of the center will depend largely upon the size of the school and the comprehensiveness of its curriculum.

The instructional materials which should be available (although not necessarily owned by that school) should include basic and supplementary textbooks, reference and source books, films, filmstrips, slides, microfilms and microcards, large transparencies, periodicals and newspapers, enrichment reading (fiction and non-fiction), vertical file materials, maps and globes, art prints, flat picture files, teaching kits, programmed materials (books, booklets, reels), a tape and disk recordings collection, professional library materials (guides, curriculum units, specimen examinations, etc.), a community information resources file, models, exhibits, and specimens. In addition, there should be supplies of materials for teachers and students to be used in processing their own instructional materials (art supplies, stencils, blank tapes, raw film, etc.). Perhaps in the near future it will also contain videotapes and other as yet uninvented or unperfected media having applicability to instructional requirements.

The instructional equipment which should be available for the above media within the single school include 8mm and 16mm sound motion picture projectors, slide projectors, filmstrip projectors, overhead transparency projectors, tape recorders (including playback-recorder facilities in language or self-instruction laboratories), disk playbacks, radio receivers, television receivers, public address systems, opaque projectors, still cameras, microfilm and/or microcard readers, microprojectors, projection screens, duplicating machines (spirit, thermal, photocopy, ink types), individual viewers, teaching machines (including, perhaps in the near future, computer-controlled devices), student response systems, tachistoscopic and other timed teaching devices, display boards and equipment, drymount presses, picture trimmers and laminators, and others. In larger schools, photographic darkroom facilities, videotape recorders, and closed circuit television facilities (including image-magnifier systems) would also be expected.

Educational media personnel will be expected to perform the following services for students and teachers of the individual school:

*Studying the school curricular organization (including scheduling, staff assignments, deployment of facilities and resources) and recommending ways of improving instruction through appropriate applications of educational media (including those applications which may free professional personnel for individualized teaching and counseling).

*Studying opportunities for and providing expert assistance, guidance, and evaluation of these media to achieve important teaching and learning objectives.

*Studying existing school plant facilities with the purpose of determining needed improvements and changes; analyzing media requirements in new buildings and working with other experts in obtaining facilities appropriately related to opportunities provided through educational technology.

*Loaning educational media and related equipment to teachers and students for various time periods.

*Building (with the aid of the school's professional staff) strong collections of educational media and media equipment within the school which are closely related to these curricular requirements.

*Enriching the school's own media collection, as necessary and possible, through recourse to outside sources (district or county collections, sponsored sources, community agencies, etc.).

*Providing expert counsel and service to assist students in learning to use effectively the educational media in the school collection.

*Maintaining liaison with community agencies, organizations, and individuals whose services or facilities are potentially useful for educational purposes.

*Training and providing student assistants, as appropriate, to assist teachers and students in various tasks related to uses of educational media (operating equipment, monitoring teaching machines, processing materials, duplicating, etc.).

*Providing first-line assistance in producing certain educational media, as appropriate, for local school use (copying slides, preparing simple graphics, making large transparencies, mounting photographs and other "flat" materials, making charts, duplicating materials, and others); referring more complicated or costly projects to media centers at other levels.

*Processing some educational media (those to be accessioned within the school which are not processed centrally).

*Furnishing and monitoring the distribution of certain expendable educational supplies (tape, film, art materials, etc.).

*Monitoring, "loading," controlling, recovering, and perhaps interpreting and reporting residual data from permanently installed teaching machines, self-instruction laboratories, certain types of student response systems, computer-based instructional devices, and similar installations.

District or County Level

The district or county level provides educational media and media services which are (a) supplemental, (b) experimental, and (c) supervisory. Its supplemental services are calculated to round out and strengthen services already in effect within single schools -- such as short-term loans of enrichment books not part of single school collections, or loans of items which may be too expensive or used to infrequently to merit purchase by one school, and others. Its experimental services provide opportunities for controlled, small-scale try-outs of materials, equipment, services, or procedures before they are recommended generally. Its supervisory services seek instances of good utilization, discern problems and areas needing attention or emphasis, and attempt generally to aid in improving instruction.

At this level, then, special attention is given to district-wide or county-wide aspects of educational media -- promoting increased and improved utilization of educational media (often through cooperative relations with other supervisorial staff members who have special field responsibilities in art, music, social studies, and the like), budgeting and planning, selecting and purchasing (or producing locally), processing (especially in the cases of the central processing of books, filmstrips, and similar items to be shelved within individual schools), cataloging (often done centrally for all schools in the system or county), inventorying, distributing (long- or short-term loan bases), maintaining (in good repair), revising or discarding, and continuously evaluating the outcomes of established or innovational practices with respect to educational media.

District- or county-sponsored production programs, especially in the television medium, are common. In-service staff education with respect to the curricular applications of new media is encouraged in a variety of ways (workshops, extension classes, publications, and the like).

College or University Level

Educational media services at the college or university level involve administrative relationships and teaching responsibilities which recommend separate examination in this analysis. Problems here are complicated by the fact that on the typical college campus it is commonly found there are at least three, and sometimes more, agencies having direct responsibilities for providing educational media services. These agencies are: (1) the library or library system, (2) the audio-visual center, and (3) the radio-television center. Other variations are also found -- as, for example, for separate photographic services or the university press.

The pressing need to provide adequate staff, facilities, and resources for rapidly increasing enrollments has stimulated interest in re-evaluating such ways or providing educational media and media services for colleges and universities. One such reconsideration, recently undertaken at Michigan State University, for example, was described by President John A. Hannah in his proposal to establish a single, comprehensive learning resource center for his campus. He stressed that:

> Such a center would not be a mere re-grouping of forces and facilities. It would -- and should -- become a dynamic center of experiment and development leading to accomplishments beyond our present power to envisage. Programming for a teaching machine or presentation of a course on television tapes is not a casual undertaking. Such projects entail a great deal of intensive work, minute reexamination and rearrangement of course content, and intimate familiarity with both the art of teaching and the process of learning. They require substantial investments of effort and money, but experience to date shows that they pay substantial dividends in many ways, including the freeing

of the faculty from repetitive teaching and drill in many areas and a speeding up of the learning process.[1]

The college library is described in the American Library Association's college library standards[2] as the "first line of assistance" to instructors and research scientists:

> The college library should be the most important intellectual resource of the academic community. Its services . . . should be geared to implement the purposes of the college's general program and to meet the specific educational objectives of the institution. Its collections should aim at presenting the heritage of Western and Eastern thought in all its richness, but should stress those particular areas which are central to the curriculum of the institution. No artificial barriers should separate the library from the classroom or the library staff from the teaching faculty. Beyond supporting the instructional program to the fullest extent, the library should endeavor to meet the legitimate demands of all its patrons, from the senior professor engaged in advanced research to the freshman just entering upon the threshold of higher learning, to stimulate and encourage the student to develop the lifelong habit of good reading, and to play its proper role in the community and in the wider realm of scholarship behond the campus.

The college or university audio-visual center typically provides educational media and media services for the professorial and research staff which are similar, in many ways, to those provided for teachers at other levels. But at the college or university level, particularly, attention should also be given to the instrumental uses of media in collecting or reporting research data (photomicrography,photomicroscopy, timelapse photography, high-speed motion pictures, etc.), and to the institution's responsibility to "publish" in film, television, or radio form as well as in print. Attention should also be given to the general education of students and adults through presentations of foreign and experimental film programs and similar means associated with media services.

Local production of instructional materials (slides, motion pictures, large transparencies, videotapes, programmed materials, charts, displays, working models) becomes increasingly important at this level.

In-service development of staff potentialities in classroom and research uses of educational media are also involved.

Radio and television services at the college or university level also involve numerous assignments of educational media personnel whose responsibilities are those of planning, writing, directing, producing, broadcasting, or distributing by other means, and evaluating the effectiveness of programs. In many instances these television and radio programs are direct outgrowths of or supplements to regular instructional emphases of the institutions.

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[1] From speech by John A. Hannah, President, Michigan State University, East Lansing, Michigan, March 27, 1961.

[2] "Standards for College Libraries," College and Research Libraries, 20:274-280, 1959.

The offering of "educational media" courses at the college and university level (to be discussed later in more detail) should be of two kinds. The first should include basic courses in the selection, preparation and classroom utilization of educational media -- for pre-service or in-service elementary, secondary, or junior college teachers. The other should include special courses for personnel who will function in various educational media positions in single schools, at the district-county level, or, in some cases, at the non-major college or university level.

Major University Level

The primary contributions of several major universities in the country should be those of providing through experimental, developmental, documentary, and survey research activities the means of extending the boundaries of theoretical and practical applications of educational media to problems of education at each of the four levels of service considered thus far. Of course, these universities must also maintain media services similar to those described in the preceding section, and they will also teach "basic" courses pertaining to educational media; but their more important function, from the point of view of their over-all contributions to the development of professional competencies in the many facets of educational media, will be those mentioned above.

THE CURRICULUM FOR EDUCATIONAL MEDIA PERSONNEL

The curriculum for educational media personnel proposed here is based on the assumptions that:

*Both generalists and specialists will enter the educational program at the post-baccalaureate level;

*The curriculum should provide adequately for changes of objectives, en route, for the specialists who decide to become generalists, or vice versa;

*Programs for all generalists presuppose that candidates have or will earn general teaching credentials. Actual paid teaching experience would be desirable for all and a requirement for some positions;

*Specialists should be expected to contribute effectively to educational media programs without being fully trained or certified as teachers. With only a few exceptions (as in the cases of librarians and audio-visual building coordinators), the programs for training specialists may not require teaching credentials or prior teaching experience.

*The curriculum of the major university (those with theoretical and experimental emphases) should provide opportunities for earning the doctorate as a generalist or specialist. Quite possibly, generalists who earn doctorates would function at the district-county, college or university, or major university level. Specialists who earn doctorates would probably function at the latter two levels.

*The curriculum of the non-major college or university should provide opportunities for earning master's degrees either as generalists of specialists in educational media programs. Recipients of such degrees would usually function in single schools, in county-district centers, and (in increasing numbers) in non-major college and university programs.

Source of Candidates

Individuals entering the professional programs described here will come from many sources; all should come with baccalaureate degrees earned in some academic field or with post-baccalaureate experience which provides basic preparation for advanced work in educational media. Those aspiring to become generalists at any level should earn teaching credentials and, preferably, have at least two years of satisfactory teaching experience or be prepared to obtain these in the process of completing a graduate program.

Some candidates will come as art majors (intending to become visual graphics specialists), some as journalism or English majors (intending to become curriculum materials or radio-TV script writers), some as librariahship majors (intending to specialize in print media as single school or other librarians), some as business majors (interested in managing business aspects of media center operations), some as photography majors (interested in specializing in still and motion picture photographic production activities), some as public relations majors (interested in audience analysis and public information activities related to the work of colleges, and school systems), some as psychology majors (interested in designing and controlling experiments, reporting findings, and recommending courses of action based on those findings), and some as engineering or industrial design majors (interested in the design and installation of innovational educational media equipment and facilities, the invention of educational devices, the systematizing of instruction).

Other candidates will develop an interest in educational media work while completing credentials for or while serving as various types of school teachers, administrators, or supervisors (particularly those whose primary interests lie in "curriculum"). Still others will come to the program from previous positions as information specialists in government, industry, public relations, advertising, radio-television, or the armed forces.

Obviously, the problem then becomes one of devising a curriculum which can accept these differently trained individuals, capitalize upon their previous preparation, provide a common core of professionalized training, and permit them to develop a high level of proficiency in one or more special areas or in general aspects of managing and supervising educational media programs.

Range of Course Offerings

To meet such professional preparation requirements for educational media generalists and specialists, the following range of courses should be available somewhere. Recommendations regarding the location of such offerings (whether in non-major or major colleges and universities) will be made later. (Please note that the course numbers below will be used later in discussing the various curriculum alternatives.)

A. Basic academic field courses

   1. Courses meeting major and/or minor requirements for baccalaureate degrees

B. Basic professional education courses

   2. Social Foundations of American Education

3. Psychological Foundations of Education
4. Curriculum and Instruction
5. Practice Teaching

C. Basic educational media courses

6. Educational Media and the Teaching Process
7. Planning and Producing Simple Educational Media

D. Advanced professional education courses

8. Psychology of Learning (including perception)
9. Advanced Curriculum and Problems of Curriculum Development
10. School Administration Problems (personnel, finance, law, supervision)

E. Advanced educational media courses

11. Evaluation (advanced study of evaluation theory and practice, with special emphasis upon defining curricular goals, using and evaluating the contributions of educational media in achieving those goals, estabalishing and applying criteria in selecting and using educational media)

12. Librarianship (probably several courses pertaining to selecting, classifying, cataloging, processing, and managing educational media collections of all types)

13. Management of Media (procedures and standards for analyzing, budgeting, purchasing, reporting, planning, distributing, storing, maintaining, and supervising the use of educational media, with particular emphasis on problems at the county-district or college or university levels)

14. Information Retrieval (reference systems, reference sources, procedures, automated information retrieval devices)

15. Educational Writing and Editing (art and science of educational writing, illustrating, editing; special attention to textbooks, manuals, educational kits, filmstrips, pamphlets, charts)

16. Production of Motion Pictures (16mm and 8mm sound and silent applications and techniques: analyzing purpose; scripting; photographing; directing; editing; sounding; titling; evaluating through use)

17. Audio Production (including Radio) (analyzing purposes; scripting; directing; editing (recording); adding effects; evaluating)

18. Television Production (analyzing purpose; scripting; directing; editing (as in the case of videotape recordings); adding effects; evaluating

19. Educational Technology (systems analysis, computer-based instructional procedures, electronic distribution systems, emerging developments such as portable videotape equipment, inventive problem-solving, "frontier thinking").

20. Graphics Production (visualization techniques, procedures, layouts, reproduction and printing, binding, editing)

21. Programmed Instruction (programming techniques, hardware, research background, practice in programming, evaluation)

F. Independent studies

22. Special studies and internship (opportunities to investigate, for credit and under guidance of competent faculty member, problems of special interest or need)

23. Thesis (major research effort at the doctoral level) or Paper (competent investigation at the master's level)

Locale of Course Offerings

One would not expect to find all of the above courses in the curriculum of all colleges and universities. An attempt is made here to describe three types of institutional attention to educational media in relation to the preparation of teachers, other educational workers, and educational media personnel.

A. Minimum level. (Maximum attention is given in this institution to the professional preparation of teachers; minimum interest in media personnel; through master's degree)

1, 2, 3, 4, 5, 6, 7, 22, 23 (NOTE: Numbers refer to courses or course areas in the preceding list.)

B. Medium level. (Maximum attention to professional preparation of teachers; also considerable attention to preparation of educational administrators and specialists, including educational media personnel, largely for single school or county-district positions; through the master's degree or "educational specialist" levels -- the latter a program extending two years beyond the baccalaureate degree)

1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 22, 23

Selected courses in the categories 11 through 24 with more emphasis upon 11, 12, 13, and 19 than others in that section

C. Major level. (Maximum attention to professional preparation of educational media generalists and specialists at theoretical, experimental and investigative levels; through the doctorate)

1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23

Requirements for Educational Media Generalists

Course requirements for educational media generalists (referring again to the preceding numbered list of courses) should take into consideration the level of service in which the candidate intends to engage.)

A. Single School level (probably a one-year master's program)

1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 19, 22, 23

B. District or county level (could be a two-year post-baccalaureate program)

1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 19, 20, 22, 23

Electives from 15, 16, 17, 18, 21

C. Non-major college or university level (also a two-year post-baccalaureate program)

qq Essentially the same as (b), with special attention to choices of electives in programming

D. Major university level (three-year post-baccalaureate program)

Essentially the same as (C)

Requirements for Educational Media Specialists

Requirements for educational media specialists will be fulfilled from the same range of courses used for educational media generalists. The person intending to become a specialist should enter the program with a suitable basic background in this field of specialization, but (except for specialists employed in the single school or field supervisors or others who work directly with teachers at the district-county level) he may come with no preparation in professional education and only a minimum understanding of the range and potential of educational media and their applications to instructional problems. The curriculum must thus provide the means of (1) orienting the individual with respect to these matters, and (2) extending and refining his specialized capabilities in the one or more areas of interest which drew him to the field.

A. Single school specialists. Specialists within a single school (the librarian and the audio-visual coordinator; in larger schools perhaps a production specialist as well) must also be prepared and certified as teachers. Post-baccalaureate course requirements might be as follows:

1, 2, 3, 4, 5, 6, 7

Selected courses, as available, from 11-21, depending upon specialization.
21, 23 (related to specialty)

B. Specialists at other service levels. Specialists at other service levels normally should not be required to hold teaching credentials (except for those engaged in direct contacts with teachers as field supervisors or staff development workers), although in most cases such certification would be desirable. Minimum requirements for professional preparation of media specialists at these service levels would be:

1, 3, 4, 6, 7. Electives from 11-21 depending upon specialization.
21, 23 (related to field of specialization)

PART II - C

THE INCLUSION OF WORK IN THE PREPARATION OF A-V MATERIALS IN THE TRAINING OF FUTURE EDUCATIONAL MEDIA OR A-V SPECIALISTS

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The following paper is written in the context of the current revolution in American education generally, and in educational technology particularly. Awareness of this revolution and some of its implications for the Educational Media Specialist is assumed to characterize the readers of this paper, and, hence, the subject will not be dwelt on here. (See report of DAVI Task Force in Audio-Visual Instructor, Jan., 1963.) Rather, the attempt will be to probe more specifically the future role and training of the Educational Media Specialist who would have significant responsibilities in the preparation of production of educational media. The introductory section attempts a quick prognosis of the present producer's situation as a basis for prescribing future changes in the training of his successors.

Many educational media producers today are uncertain as to their present and future roles. They have some reason to be, particularly as their interests and activities may have been focused narrowly on media, technique, and hardware.

For one thing, new technologies have arisen to challenge the expert -- the expert in motion pictures, for example. On the one hand awesome competitors have appeared such as videotape with its mysterious electronics in place of the familiar mechanics and photographics. On the other hand some deceptively simple new competitors have appeared like 8mm cameras with their automatic this-and-that which a child can operate. Thus, the motion picture expert may find he is in trouble because, paradoxically, he both knows too little and knows too much.

Other media experts have their worries as well. For the expert still photographer there is the do-it-yourself Polaroid, for the expert sound recordist there are student-operated language lab consoles, for the graphics expert there is the learn-how-in-two-days seminar given free by enterprising manufacturers of simplified new materials and equipment, and for the expert librarian there is the computer-based system for storage, retrieval, and dissemination of printed matter.

Educational media experts have other challenges today. For example, requests for a set of slides were once simply that they "be about" some subject. Now it is requested that they in general "teach" some subject. Beginning to appear are expectations that they meet "explicit behavioral criteria" such as enable first graders to type their names or seventh graders to achieve 90% on a given 50 item test in science. Going are the comfortable days when the educational media producer "knew" by intuition or technical standards that the product was right, or top quality, or the best.

In sum, the particular aspects of the present situation that seem most directly related to the training of future educational media producers are two:

1. Changing Technology

   Technology will continue to simplify many of the techniques of production so that many tasks can be taken over by the relatively unskilled and thus eliminate or reduce the need for many production skills. At the same time technology will continue to add new and complex media so rapidly that no one can become an expert in more than one or two. Consequently the trend toward single media tech-

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nicians will continue, and as one medium changes or is replaced by another the previous technicians will have to be retrained or replaced by new. For the technician, then, the picture is one of change and perhaps continuous in-service training.

However, for the educational world the acute need will be for someone else -- a man who somehow has an encompassing knowledge of all media and the peculiar contributions of each to education. Who can fill this role and how will he be trained?

2. Criteria of Excellence

The other aspect of the present situation is that educational media producers for the most part are using outmoded or irrelevant models for professional accomplishment. The educational film maker's criterion of excellence is frequently Hollywood or the Film Festival Award; the educational TV director's criterion is directly or indirectly the rating, i.e., number of viewers; the educational photographer tries to copy his commercial counterpart; the educational graphics man gets his inspiration from the cigarette and bra ads, and the educational sound recordist aspires to outdo the hi-fi stereo bugs. What media producers today know about learning as a criterion or use it consistently in their decision making?

Future more vital role for the designer of educational media

It should be stated openly that what follows is no simple panacea and in fact may be grasping at straws. But let's examine the position as detachedly as possible and assess its merit.

Consideration of the questions raised in 1 and 2 seems to me to suggest the need for a type of man who has a dual specialization -- one in educational media (production and/or use) and one in educational research and theory (learning and/or communication). This man would be an Educational Media Specialist whose responsibilities might encompass the traditionally separate preparation and use areas or might include only one or the other. However, in the discussion and proposals which follow, the preparation or production role will be the center of attention, and the name Educational Media Designer will be applied to it. Conceive of the name as referring to a design function rather than to a design man, for as a function it can more flexibly become part of one man, all of a man, or divided among several men as the situation demands.

The Educational Media Designer would be a designer of educational media systems to fit schools of various sizes, curricula and objectives of various types, and learners of various ages and capabilities. He would be a professional in the prescription of pictorial and verbal constituents to meet specific needs of the teacher and learner in the furtherance of given educational objectives. The Educational Media Designer would not basically be a technician, though he must know the educational attributes and technical possibilities of each medium. He would not basically be a teacher, though he might well have been one and would certainly be thoroughly familiar with their objectives and methods. He would be like an engineer in knowing what type of structural member (pictorial and/or verbal element) can contribute to the whole building (learning environment) in a way that will meet the needs of the users (teachers and students, and ultimately, society). Actually the media producer of today is already a designer, but he must become a more effective one.

What is the significance of this role to AV and to education?

1. It will be an increasingly important and essential role as more educators become aware of the centrality of media to the process of learning and at the same time become overwhelmed by the complexity of the task of choosing and integrating the great diversity of media into efficient, effective, and cohesive units.

2. The role can encompass all media because technicians in particular media will implement the designer's plans in large school systems, or, given a simplified technology, the designer can in a small school execute much of his own design satisfactorily.

3. The role will have such a braod base that the designer would welcome all technological change rather than feel threatened by it, i.e., he would accept technological advances as an architect accepts new building materials.

4. Not being bound to a particular medium, as is the present producer, the future designer can choose more objectively the medium best suited for a specific educational objective.

5. Backed up by enough research (much more than now exists) and experience he will be able to reliably specify in each case which design would be most apt to effect the learner behavior desired by the curriculum specialist, i.e., he would have valid educational criteria and know how to meet them.

6. The designer will be intimately familiar with the whole encoding-decoding process whereby ideas are translated through successive steps into media, tested with the target audience, and refined as necessary. (A word of caution here -- I don't believe that in the foreseeable future educational media design will become so certain, pat, and formalized that a healthy amount of creative ability will be unnecessary. However, if established educational goals are to be met with any certainty something more tangible than an artistic flair will be required of the designer.)

To definitively specify a curriculum for shaping men for the above role would first require that a comprehensive set of objectives be drawn up that would denote in precise and detailed behavioral terms what the educational media designer must be able to do. However, knowing both the difficulty of such specification and the provisional framework within which this paper is being written and, I hope, received, it seems unwise to go that far at this time. Consensus on descriptively-stated goals and course content should precede their full delineation. Hence, the preceding description of the role will suffice for planning in gross outline a curriculum proposal describing one route to go in preparing for it.

Undergraduate preparations

The student entering the program should have a bachelors degree and before completing a Doctor's or Specialist program should have two or more years of work experience in the field.

Making lists of undergraduate courses judged to be necessary and desirable is relatively simple. Fitting them into the realities and strictures of present college and university requirements creates impossible problems. One solution would be just to list the courses and assert that 10 years from now requirements (currently undergoing a widespread reappraisal in liberal arts colleges) will be sufficiently permissive to include them. Still more speculative would be the suggestion that a number of undergraduate courses might be tailor-made for the purpose from a synthesis of the relevant pieces of many existing courses. As a compromise, two traditional majors will be suggested along with a list of important course content.

Education seems to be the best compromise for the undergraduate major because it includes both the desireable professional education courses and a reasonable breadth of arts and sciences courses. The education courses that seem most important are those in psychology, methods, curriculum, measurement, and audio-visual. (Many of these could be made more meaningful to media persons and perhaps to teacher trainees as well.) Outside of education the course concentration could be in science, social studies, language arts, or mathematics.

Psychology seems to be another possible undergraduate major with a minor in education, if possible, or at least all electives in education. The greatest problem would be provision for a significant student teaching experience.

Important Undergraduate Content (to be included as possible in one of above majors)

1. Education - especially psychology, methods, measurement, curriculum, administration, and audio-visual (beginning preparation and utilization)

2. Psychology - especially perception, learning, motivation, development

3. Student teaching - providing a first hand encounter with the teaching-learning process

4. Communications

   Basic Skills

      Writing - creative, journalism, playwriting, scientific writing. (also linguistics and symbolic logic.)

      Drawing - freehand, mechanical. (also art history and aesthetics)

   Technologies - introduction to techniques

      Computers, photography, motion pictures, radio, television, etc.

   Theory and research

      Should be courses especially for Educational Media Specialists as an an introduction to graduate work. Should provide some models or frameworks within which much of the otherwise fragmented undergraduate experiences can be unified. (Fragments now appear in occasional courses in English, Journalism, Business, Sociology, Psychology, and Audio-Visual.)

5. Mathematics - enough to handle statistics, computer programing, and mathematical models for learning and communication.

6. Physics - particularly for a thorough working knowledge of electronics, but also for mechanics and optics.

7. Acting, Directing - in TV, theater, or film

8. Business Management, Accounting

A valid case could be made for sampling all major fields of learning. The importance of this would be that some awareness of the ways of gaining and assessing truth in each discipline as well as the structural relationship of ideas within and between disciplines is essential to the design of any eventual learning system to impart the basic concepts in each field. In point of fact, however, most college and university curricula already provide for a minimum and perhaps sufficient sampling across major discipline groupings.

The case for some undergraduate specialization (science, social studies, languages, or math) may be a stronger one because of theprobable demand by large city or state systems for media designers with sophistication in major school subject areas.

Particular importance is attached to the student teaching experience or something comparable in a college, church, or community service activity that puts the candidate in close and meaningful contact with the teaching aspect of the instructional process.

Masters Program - Operating level of competence

The Masters program being proposed would prepare the student to be a Media Designer at the school building level or at the small system level. As such he must be a very carefully weighted composite of communication process, technique, and theory. He will be dealing with relatively simple men-machine systems; relatively inexpensive and uncomplicated media; and relatively unsophisticated methods of obtaining feedback, evaluating it, and modifying the system.

This Masters program is a kind of core curriculum for all post graduates, but is terminal for Masters candidates and introductory for Doctors and Specialists.

3 hrs	Communication Theory - introduction
3	Pictorial Communication - theory and practice
3	Verbal Communication - theory and practice
6	Media Practice - familiarization with current educational tools for both production and utilization.
3	Design of Group Media - introductory principles and practice.
3	Programing of Self-instructional Media - introductory principles and practice
3	Media Utilization Systems - introductory principles and practice
3	Advanced Educational Psychology - learning, motivation, individual differences
3	Educational Measurement - operational educational objectives and their assessment
3	Administration of Media - personnel, budget, management
3	Group Processes and the Dynamics of Engineering Social Change
36	Hours Total

Specialists and Doctors Program -- Advanced levels of competence

The curriculum for these two roles builds on top of the Masters program. It consists essentially of advanced study in the areas introduced during the first year of graduate work. The differences between Specialist and Doctoral programs are few. The Specialist curriculum includes Advanced Media Practice while the Doctoral provides Advanced Research Methods. Also, and importantly, the Specialist includes an internship while the Doctors substitutes a thesis.

What is envisaged is two roles of equal stature but somewhat different primary emphasis, the Specialist being focused on the design, revision, and supervision of large and complex media systems, and the Doctors on the conduct of research and the development of new educational media systems and theories. The requirements in many situations would be such as to favor neither man, while in others the situation might call for additional specialization favoring one or the other.

Specialist

6 hrs	Advanced Communication Theory
6	Advanced Media Design
6	Advanced Media Utilization Systems
6	Advanced Construction and Testing of Educational Objectives
6	Advanced Media Practice
15	Internship -- design, implementation, evaluation of man-machine system for teaching a specific school subject at a particular grade level
45	Total Hours

Doctors

24 hrs	Same Theory, Design, Systems, and Testing Courses as above
6	Advanced Research Methods
15	Thesis
45	Hours total

Looking back over the three programs I observe that though planned with the producer-designer in mind they might also, with minor modification, be suitable for the utilization person. Perhaps at the Masters and Doctors level there should be a unitary program while the Specialist level might provide for the production and utilization split.

The Training Program

Staff and Equipment. Instruction leading to the three advanced degrees should epitomize the design-for-learning principles that it espouses. Its system should demonstrate the optimum use of humans and machines as means to the accomplishment of clearly specified behavioral goals. However, this sophistication should not necessarily mean excessive investment in staff or equipment. This is particularly true of the Masters program which should be such that the equipment and staff investment would not be so great as to be a deterrent to its widespread development in colleges and universities across the nation. The seeming paucity of the full fruits of technology (3-D sound, wide screen motion pictures, and computer-based instructional systems) will be a deliberate lesson to the media student that learning criteria are not always met by higher powered machines. The machines for a Masters program will be comparable to that likely to be available to the school building or small system in which the graduate will find his place. In terms of today's technology it might include a packet of file cards for a teaching machine, a Polaroid camera for slides, etc., a Ozalid outfit for overhead pieces, and an 8mm camera for single concept films.

For the Specialist and Doctoral programs, however, the latest devices should be available regardless of cost, and so should the engineering capability for creating new devices. There should be ample opportunity for the media students to have first hand experience in operating this equipment, but always within the framework of using it to further the progress of a learner toward known educational objectives. No media student should be allowed to become so enamored of or personally identified with one medium that it is favored in his design choices over others of more suitability for the purpose.

Throughout the training, experience in the techniques and processes of each media type is never isolated from design principles or behavioral outcomes. When a student designs and executes a programed slide and tape unit, for example, his peers and instructor may critique it, but this should not be allowed to outweigh the final criterion of success -- the behavior of learners experiencing his program.

Scope and Sequence. A detailed scope and sequence plan should be the product of extensive trial and revision, but some of its characteristics can be suggested and a representative unit sketched. My conviction is that the two seeming immiscibles, theory and practice, should be intimately blended in the sequence of training steps. The image of an ascending spiral best suggests the structure of the curriculum. One round of it might begin with an aspect of theory or a design principle, explore pictorial and verbal techniques relative to it, design a simple message incorporating it, use the message with a few individuals or classes, obtain and assess feedback. This circuit could be repeated at increasingly sophisticated levels of production technique, communication theory, message structure, and learner response. The initial medium should be as simple and flexible as a feltboard, thus permitting the student direct encounter with the basic problems of cue selection and cue arrangement. Manipulations within this medium should be wide ranging and might include concreteness-to-abstractness variables; size and color of elements; proximity of elements; use of arrows, circles, and other conventions; shading and texture; figure-ground relationships; emphatic devices, aesthetic relationships, etc. Various audio elements could begin to be introduced via simple tape recording in conjunction with the feltboard visual elements. This would introduce the student to the basic theoretical and practical issues involved -- influence of verbal cueing on pictorial perception, consonant and dissonant relationships between the aural and visual modes, channel capacities via each mode, the principle of contiguity in learning, etc. Beginning photography and copy lighting could be introduced as a means of recording feltboard pictures. Then a series of feltboard images could be designed and photographed. This might be the time to introduce the design principles involved in relating successive pictorial units -- how much similarity to retain and how much difference to introduce without stretching the perceivers ability to organize the elements as part of a common structure, how large a step to take between pictures, how to direct and maintain attention frame-by-frame, etc. Media of motion could be introduced at this time by simple animation techniques involving moving and single framing of feltboard figures. Psychological experiments with Phi-phenomena could be introduced here in relation to the illusion of motion in motion pictures. From the arrangement and manipulation of cutout figures on a feltboard to the direction of people within the frame of a still or motion camera may seem a large jump, but might be a next step when judged independently of the lines of union jurisdiction it crosses and when seen as a next higher spiral in learning. At any rate, the above is only one of many possible ways of programing a spiral sequence of theoretical and applied activities in a curriculum. The important thing is that an intimate knowledge of learner behavior, i.e., what he perceives and how he responds, develops in conuunction with first hand knowledge of communicator behavior, i.e., the techniques of designing and presenting a message.

Miscellaneous concluding thoughts

First, it should be clear to the reader, as it is to the writer, that this paper is strongly slanted toward the preparation of Educational Media Designers for a career in formal education to the exclusion of other fields currently clamoring for such specialists and probable others that will be. In a way the proposed curriculum already suffers from the attempt to include too much content diversity, and even suggests specialization in so many fields as to in essence produce a generalist. Without wanting to continue this tendancy I would suggest that the cirriculum could readily be adapted to fit media designers for careers in industry, for example, by an internship or thesis in that area as well as the substitution of such courses as business communication, management, finance, etc., for comparable graduate and undergraduate work. Similar substitutions could also be made for those students preparing for media design work in Medicine, Government, International Relation, etc. Criteria for such substitutions should be that media designers must be as knowledgeable as possible in the subject to be communicated, the situations in which the communication takes place, and the particular audience to be reached by the communication. Except for the strictures imposed by these factors the media student's preparation in educational theory, process, and technique could be the same regardless of the particular field in which he is to apply his talent.

Second, the cycle of design-test-redesign has perhaps been labored unduly in the paper but would, I believe, characterize both training and practice particularly at the outset. Eventually, as research and experience accumulated, the initial designs would be more nearly correct and the redesign phase less extensive, perhaps. Also, as educational system designs came to be perfected there would be the possibility that the design function would give way to a kind of monitoring and occasional modification. However, if the present dynamic situation in education continues and if mans knowledge continues to increase at the same accelerated rate, it would be time to begin a new K through 12 design as soon as the previous one had been finished.

PART II - D

THE ADMINISTRATIVE PREPARATION OF EDUCATIONAL MEDIA SPECIALISTS

?

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During the past half century there has been considerable preoccupation in education with analyses of what a good teacher is, knows, and does. The hypothesis of extensive investigation in these areas was that if we could identify discrete characteristics that are common to very good teachers everywhere, we could concentrate on teaching these specific characteristics to prospective teachers and we'd "have it made!"

The results were disappointing. It proved difficult to secure agreement even on what good teaching is, to say nothing of identifying the characteristic behaviors, knowledge and skills which such teachers are presumed to possess.

It had been anticipated that the analysis would be difficult because of the inherent complexity and subtlety of learning and of human relationships involved. But it was disconcerting to discover so little agreement on such time-honored qualities for teachers as above average intelligence, thorough knowledge of subject matter, and love of children.[1]

Some Key Factors in the Preparation of Administrators

There have been similar attempts to identify those characteristics making for effective school administration and with somewhat comparable results. The conclusion is reached that the qualities that make for a good administrator, like those of a good teacher, do not exist in isolation and cannot be specifically taught. They do exist and appear to derive much of their character in combination with other qualities and in situations which call them into action.[2]

The Importance of Method

The subtle relationships and interactions of desirable qualities plus the experiences which call them forth, test, and perhaps strengthen them, represent the best clues we have for developing effective programs for the professional preparation of educational administrators. Thus it is the method by which worthwhile experiences can be provided that perhaps deserves attention as much as the specific learnings which must be sought.

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[1] Borg, Walter R. in "Personality and Interest Measures as Related to Criteria of Instructor Effectiveness" (Journal for Educational Research, May 1957, pp. 701-709) correlated a long list of tests of traits with ratings of peers, supervisors, and students. Correlations were uniformly low and inconsistent with the criteria. This is one of some hundreds of studies which led Hall and Vincent to comment, in an article on staff selection, on "The present confusion--almost frustration--in attempts to define effective teachers . . . " (Monroes Encys. of Ed. Rsrch, 1960, p. 1377)

[2] Campbell, Roald F. and Faber, Charles F. in "Administrative Behavior: Theory and Research" (Review of Educational Research, October 1961 p. 364) report that "After years of futile effort with the trait approach to administration, personal variables, perhaps categorized at a more significant level, are being related to administrative behavior." A few behavior patterns such as conjunctivity, intensity, social ability, ambition, and drive appear to be significantly related to administrative success according to two recent studies.

There is little new in this suggested emphasis on method, but it has exciting possibilities if viewed in the context of rapidly growing demands on the educational systems of our world today. If a choice must be made, it is probably much more important that a media specialist (or a superintendent of schools) be effective in bringing about acceptance of educational change than that he know how to put together a good budget.

It could be argued, of course, that we are comparing here two different orders of function of the genus administratus. True. But the writer would hold the analogy still valid for it is not a question of "loving good budgets less," but of "loving good leadership more." It is a question first of emphasis and, if you accept this, of what you can do about it--in short, a question of method. Leadership for educational change is of great importance for any administrator; for an educational media administrator, it is a prime requisite.

Leadership for Educational Change

On the importance of effective educational leadership with respect to changing needs, there is much evidence. Lindsey and Schwarcz in a recent ASCD Yearbook, for example, point out that:[3]

> "Various dimensions of our complex and changing society have been the subject of many analyses, all of which result in the conclusion that our society is extremely complex and is changing at a rate almost beyond calculation. Unless those who assume educational leadership are aware of what is going on in other areas than organized education, unless they are ready, willing, and able to modify their present concepts in terms of new developments, they are performing dangerously below par."

It is likely that were these words to be written today rather than several years ago, something stronger than "dangerously below par" would be employed. Educational leaders in many quarters have been shaken sufficiently by a succession of developments, for the most part external to the field of education itself, so that they are beginning seriously to consider fundamental changes in curriculum, method, and school organization.

The Educated Administrator

There is a clue in the above statement to another competence necessary for educational leadership today, and this is a knowledge of something more than the field of professional education and a specialization within it. An administrator must be able to function successfully in a broader arena than a school, a school system, or a college if he is to function effectively as a leader within it. If this has a ring suspiciously like the old liberal arts tradition for the education of teachers, so be it. But let it be recognized at once that there are major differences in philosophy, function, and method from the Great Books concept of education.

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[3] Yearbook 1960, "Leadership for Improving Instruction," Assn. for Supervision & Curriculum Development, NEA, Wash., D.C., 1960. p. 16.

It has always been true that a good educator is first of all an educated man. One obviously cannot teach what he does not know; and a breadth of knowledge in cognate fields is essential for depth of interpretation in one's own. But we have long since abandoned the concept that knowledge and the ability to communicate that knowledge to others are in any significant degree synonymous. Generations of long-suffering college students are sufficient testimony to this fact if such evidence is needed.

Nor is knowledge for its own sake enough for the professional educator. He must be able to apply the benefits of his learning to the lives of others and to do so with uncommon effectiveness. He has an obligation to this end as a professional person. Without such competence, he has little fulfillment as an individual--and limited success as an educator. Herein lies the Achilles heel of the academic tradition.

The needed changes in education are antithetical in method, as well, to traditional concepts of learning. There have never been enough great teachers at whose feet to sit to make a quality education possible for more than a select few. The educational needs of the peoples of the free world during the '60's and '70's are of such dimensions in underdeveloped countries as to preclude serious consideration of literacy as a prerequisite for much of the learning which must take place. And in the more fortunate industrial nations, learning must proceed on a scale and at a pace for which the medium of print as the primary channel of instructional communication is inherently inadequate. The true revolutions in education must come both in the organization of knowledge and in its modes of presentation.

The above discussion has purposely avoided such added complexities as clarifying educational objectives, accommodating individual differences, applying diverse theories of learning, and curriculum development commensurate with the task at hand. With all of these and their protagonists, the educational media specialist must be able to work effectively. To do so, he must have more than superficial knowledge of the basic fields and issues in education. This is one of the things that the members of the Cincinnati Seminar had in mind in using the term "generalist specialist" for describing the nature of the audiovisual specialist.

The Basic Function of Administration

Another basic concept with which good administrators must be thoroughly familiar is the simple fact that administration exists solely for the welfare of the student. Not for the teachers, for other administrators, for the school buildings, or even for the community which established and fills the position does the superintendency or any other administrative position exist. This concept may be a bit difficult to accept at first, for it may seem foreign to the common perception or "other image" which one has for administrators with whom he is familiar. Yet it is basic, philosophically sound, functionally unassailable -- and beautifully simple.

The essence of the above principle of administration is the purpose for which the schools themselves exist. While some objectives of education are properly stated in terms of societal, family, and group welfare, it is only through individual student learning and development that objectives of any kind can be realized. Thus the fundamental truth that the schools and all who are employed in them are there for one purpose only -- to help Johnny and Janey learn.

Should you be tempted to treat this concept lightly, don't. One thing all administrators have to do from time to time is to solve problems of various kinds. Many of these problems may be solved rather readily in such tangible terms as budgets, organization, or finding the errant culprit.

But the really difficult decisions which test the character, judgment, and overall ability of the administrator frequently require recourse to such fundamental questions as, "What decision is going to be best in the long run for the students?" If he can answer this question affirmatively and honestly, he will seldom be far off in his decisions. If he cannot, or if he fails to ask it, he may frequently err and compound his problems in the process. The good administrator is well versed in social as well as administrative theory and philosophy; they contain the fundamental principles by which he operates.

The Administrator Type

There are many other qualities of effective administrators which come readily to mind. They are able to judge people well, to delegate responsibility and the authority to go with it, and to make sound judgments and quick decisions. They are generous in giving credit to those who work with them. They can analyze problems, assess priorities, organize themselves and their associates, and have plenty of that commodity we call drive. They have good business and public relations sense, a good sense of humor and the capacity of being genuinely sympathetic with the problems of staff members without "coming unglued." They are generally relaxed in relations with others but capable of firmness when necessary. They are at once creative and realistic, inspirational and cautious. As a rule, they are sensitive and considerate but must also be thick-skinned and rugged when toughness is needed. They inspire confidence in others, are kind to dumb animals, and are good judges of horseflesh etc. You name it!

In addition to being quite a person in his own right, our good administrator must also be a top professional educator, dedicated to what he is doing and thoroughly enjoying it in spite of the numerous and inevitable headaches of skimpy budgets, personnel problems, service breakdowns, unappreciative teachers, long hours, and falling arches.

By now, any sensible young candidate who chances to read this should be convinced that the whole thing is impossible; that if such paragons really exist, they're a bit short on brains to be working for an educator's salary; or that perhaps for characters like these, Plato might have had something at that in his proposed treatment of the Golden Men.

Should our prospects still be around after exposure to the above eulogy, they might be worth another look. The first step in the preparation of administrators of media programs, and possibly the most important one, is the selection of likely candidates. While there is more than a touch of whimsy in the above paragraphs, there is also more than a little truth. And while the exemplary qualities of a good administrator cannot be taught directly, they can perhaps be developed if the candidate has good potential.

AN EDUCATOR-ADMINISTRATOR MODEL

To sum up the discussion to this point, our prospective media specialist needs to learn through some means quite a few ideas, principles, attitudes, and modes of behavior which are known and practiced by good administrators at any level of the educational system. Most of these ideas acquire meaning and significance to the individual only as he gains experience at an operational level. But we can and must give him an opportunity to become at least initially acquainted with them in the course of his preparation. It may be possible to do more, depending on the methods we use.

The media program administrator's course of preparation should have certain common elements with that of other persons preparing for supervisory or administrative positions in the school system. Most particularly, he must acquire and develop the skills of organization and good human relations which characterize most good administrators in public service fields.[4]

A Need for Balance

Let it be clear that we do not propose the same preparation programs for media specialists as for school administrators plus a few media courses thrown in. But let it be equally clear that neither do we advocate the same preparation program as for curriculum directors plus a few media courses thrown in. The ideal program is somewhere in between. A sufficient concentration in the curriculum and learning theory areas is needed to provide a sound philosophical and functional base for the media operation plus the administrative knowledge and skills to make it work.

MSU's Program for Educational Media Specialists

The graduate program for educational media specialists at Michigan State University illustrates some of the elements regarded as important for the administrative preparation of directors of media programs. This particular program was adopted in 1962 after several years of study by committees representing the Colleges of Education and Communication Arts and all of the educational media. A variety of programs are provided for media specialists at the Master's, Six Year, and Doctoral levels.

A high degree of flexibility permits programs to be tailored to individual backgrounds interests and professional goals. Thus, a candidate with experience largely at the secondary level gets considerable exposure to elementary curriculum, methods (particularly in reading) and child development. Candidates with an elementary teaching background, on the other hand, are required to become familiar with the secondary school program. This pattern applies, of course, to people whose eventual goal is to direct a media program for a school system.

Candidates with no administrative or supervisory experience are assigned course work in these areas commensurate with their needs. Should their professional goals lie in industry, adult education, government or overseas programs rather than in formal education, the overall program is modified accordingly.

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[4] Woodard, in a doctoral study of competencies needed by administrators, noted the similarity in competencies reported as required by supervisors, principals, and superintendents. Preservice areas of study considered essential and which with minor changes of emphasis would be of importance for media specialists, as well, include: function and scope of public education, communication, educational foundations, human relations, community relations, curriculum, instructional and guidance activities, supervisory services, evaluation and research, and related agencies. (Woodard, Prince B., A Study of Competencies Needed by School Administrators and Supervisors in Virginia with Implications for Preservice Education, Univ. of Virginia, 1954.

To accommodate some of the need for the "educated man" concept discussed earlier, graduate students at all levels take a sequence of courses outside the College of Education. This minor or cognate area is normally, but not necessarily, related to the candidate's undergraduate major field. Sociology, political science, and psychology are frequent choices for minor fields of study. Within them, course selections may or may not relate in some manner to the media fields. Public Administration, the Sociology of Mass Communications, and the Psychology of Persuasion are examples of related courses within the three fields. Work in Communications is normally a part of the major.

In the media area, beyond the basic course, are courses in production (graphics, photography, ETV, and programed instruction); research and theory, including communications research; and a specific course in administration. There are also several seminars and workshops which include administrative considerations of such subjects as educational technology, instructional systems, programed instruction, instructional materials centers, and CCTV. Such seminars and workshops can currently be scheduled at this institution without the formality of establishing a new course. This procedure permits new areas to be tried out as a basis for possible later establishment as regular offerings.

A new feature in the Media Specialist Program at this institution is the provision of intern or extern experience as an integral part of the program.* The distinction between the two is primarily in the degree of independent operation with which the candidate functions. One with limited prior experience might be assigned for a term as an assistant to the media director of a city school system to observe and to participate to the extent that his competence makes feasible. A student with more background might be assigned such regular duties as inservice work with teachers on ETV, on programed instruction, or on some other phase needed in the system. In the latter case, the extern would function somewhat as a resource person and would add a distinctive dimension to the program.

In either case, the assignment is planned to add a distinctive element to the candidate's experience. It is arranged, and the system selected with this purpose in mind. The candidate lives in the community and attends faculty meetings and school affairs like a regular member of the staff. He is also assigned a specific problem related to his service assignment and has a report to prepare at the conclusion of the experience.

During the quarter, at approximately two week intervals, the candidate returns to the campus for a Saturday seminar. At this time, problems and questions on off-campus assignments are reviewed, solutions or improvements proposed and examined, and pertinent readings assigned. The pattern is similar to that now used rather widely and successfully in professional programs for school administrators. We feel that it has exception possibilities for the media specialist program.

An interesting feature of the MSU media specialist program is a weekly luncheon for participating graduate students who are on campus. Initiated and planned by the students themselves and attended by their advisors, these luncheons have proved to be highly successful. Faculty members from other departments are frequently invited in to discuss pertinent administrative topics informally with the group. Such subjects are discussed as school building trends, team teaching, curriculum development, large group instruction, administrative theory and the residual rights of faculty members in programed materials and taped or filmed lessons. In addition, there have been useful discussions of degree requirements, thesis problems, a new Educational Development Project now under way in the University, and plans for the forthcoming DAVI Convention.

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* Limited thus far to six year and doctoral programs

Perhaps the best feature of the luncheons is the opportunity for students and faculty members to get well acquainted personally with one another in a manner difficult to achieve in office or classroom. In addition, a healthy group identity has developed from which much of value can come. One such benefit has been the establishment of a Media Grad Room--a well-equipped sanctum for work and study away from crowded family apartments or library and accessible day or night by special key..

The Administration Course for Media Specialists

As will have been noted before now, the writer regards numerous other elements as fundamentally important in the administrative preparation of media specialists. Many of these do not lend themselves to formal treatment, but rather a product of method and of human relationships. There is also a specific body of knowledge and skills relating to media program administration which can be taught to advantage in a formal course situation for those who have had basic or advanced work in the nature and effective use of the various instructional materials and media. An outline of representative topics for such a course is given below.

Outline of Administration Course for Media Specialists

I. Role of the Educational Media Program

   A. Analysis of media program objectives - meanings in specific terms - relation to overall objectives of the school.

   B. Relationship to the total educational program - relation to teachers and students - to curriculum - to educational administration - to supervision - to the community.

   C. Nature of the job to be done - scope of the program - services required - definition of terms.

   D. Educational justification - review of pertinent research - challenges to todays' schools and higher institutions of learning in population - in the multiplication of knowledge - and in the rapidly changing nature of society.

II. The Nature and Functions of Administration

   A. Why Administration?

   B. Responsibilities of the media administrator - his administrative relatioship to other staff members - the team approach to educational problems - implementation of the curriculum - curriculum improvement - program development.

   C. Characteristics of the good administrator - a look at their individual differences - experiential development - evaluation of.

   D. Evaluation of administrative effectiveness - criteria - how applied to individuals and to programs.

III. Initiating New Programs and Improving Established Programs

A. Starting a new program - basis for - steps involved - precautions - parallels in curriculum change, etc.

B. The leadership function - relationship to educational change - hereditary or acquired? - implications for modes of operation - evaluation.

C. Program Development - impact of educational technology - required planning - responsibilities for keeping informed in depth - methods of preparing teachers and decision makers for needed developments - coordination with curriculum development - research and experimentation - continuing evaluation.

IV. Effective Organization of Media Services

A. Analysis of representative successful programs of several sizes, types, and levels to determine organizational similarities - differences - advantages and limitations.

B. Relationship of program function to organization - what to include - why? - standards of effective service.

C. Organization for small, medium and large operations - how determine - factors in - standards for good organization.

D. The service operation - importance of excellent service to the total program - organization and staffing for - system development in terms of total program needs - necessary priorities - handling complaints - continuing evaluation.

V. Staffing the Media Program

A. Elements in establishing staff needs - program functions - size of system - stage of development - financial support, etc. - significance of each - establishing a plan.

B. Personnel selection - qualifications - how determine - other bases for selection - sources - selection procedures - ethical and professional considerations in selection.

C. Staff development - importance of - elements in - staff integration and draining - staff relationships - assignment of authority with responsibility - "credit" - staff problems, their prevention and cure - performance evaluation.

D. Staff salaries and promotion - pertinent policies - relation to institutional schedules and policies - standards for.

VI. In-service Education of Teachers

A. Establishing a base for - motivating interest - gaining support of other administrators - cooperative approach - developing plans.

B. Organizing programs - analysis of needs - small and large group techniques - enlisting participation of able teachers - individual self-teaching devices - examples of successful programs.

C. Administrative policies concerning - relation to other overall school programs - importance of gradation of experiences - timing and pacing - the continuing program.

VII. Equipment and Facilities for the Media Program

A. Administrative responsibilities of the media director - knowledge of desirable equipment and facilities - standards and needs - establishing needed relations with top administration - assisting in overall planning of remodeling and new construction - securing priorities for instructional materials and equipment.

B. Building facilities - classroom and large group space requirements - electrical, light control, etc. - standards - impact of technology - the "crystal ball."

C. Equipment selection and procurement - assessment of needs - standards for selection - relation to overall school needs and to the service budget - bids and purchasing procedures - needed records - long range planning - cost and performance analysis.

D. The Center (AV, IM, EM, IC, or LR) - operational facilities and equipment requirements (including production) - how determine - standards for - sources of - relation to program - need for long range planning - continuing evaluation of procedures.

VIII. Financing the Media Program

A. Elements of financial planning - sources of total school funds and their expenditure - proportion used for instruction, capital outlay, maintenance, etc. - source of funds for media materials and equipment - interrelationships with total financial requirements of the schools.

B. Interpreting program needs in dollars - pinpointing program objectives - short and long range plans - establishing priorities - adapting to anticipated allocations - putting the budget together.

C. Effective presentation of budget - building the case for program needs in terms of school system needs - appropriate visualization - comparative records - evaluation of progress - evidence of intelligent planning.

IX. Interpretive Functions of the Educational Media Specialist

A. Importance of effective public interpretation of the educational program - relation to the media program and its functions - pros and cons - factors for consideration - patterns.

B. Interpretation of the media program - continuing rather than sporadic - interpreting to teachers, administrators, and community - competencies required - examples of effective programs.

C. The forward look - the model or image desired - identification of audience - specifying the message - factors of relevance, balance, and desired effect - evidence of basic objectives - executing appropriate programs - evaluation.

The elements in the above outline are probably fairly typical of those found in similar courses in a number of universities. There may be other elements the reader would add or substitute or he might label or organize these differently. This is unimportant so long as the concepts represented are functionally learned by the student. As stated, they represent one pattern for an appropriate scope and sequence in a formal training program. Of much greater importance in this writer's judgment, is the method by which the content included can be made meaningful and vital to the prospective or operating media specialist.

The Method of Approach

Intellectual awareness of administrative concepts is not enough. It is all too easy to study about administration without learning much about how to function as an administrator. Having helpful answers and being able to do something with them in a real situation is an essential objective of administrative training. One may acquire this ability after years of experience if he is reasonably endowed with common sense, fortitude, and sufficient good luck to have avoided fatal errors. But we have neither the time nor the excuse for this kind of inept preparation of tomorrow's educational leaders in the media field.

There is no magic answer, of course, but the problem approach to the administration course has several distinctive advantages to commend it. One is that, if properly handled, the student has some of the feeling of discovery and satisfaction which real solutions to real problems brings. Another is that his approach provides a meaningful framework on which to hang administrative concepts and ideas. And, finally, the problem approach has the potential of making the learning situation somewhat more real and stimulating for the student in that actual administration is frequently involved with problems or with their prevention.

The plan suggested involves the following procedures:

1. A conference with each student in the administration course to determine his background of experience, his interests, and his goal in the media field.

2. Selection, based on the above, of a problem for particular study during the term. When feasible, this study should be related directly to his present position and school system and designed to help solve a real problem. The intern or extern assignment might well provide the problem of study for advanced students.

3. The class sessions are conducted in seminar fashion. Since each special study project is apt to cut across several of the units outlined earlier, the students are given the responsibility of raising significant questions and problems related to their particular topics at appropriate points during the term and of contributing in a substantial way to discussion at such points. In addition, the instructor has a list of problems on each of the units and uses them for assignments or otherwise as needed to assure that significant areas are not overlooked. As a variation, some assignments might include the identification of practical problems which the readings do not adequately cover.

4. Class or group visitations to operating centers, CCTV, self-instruction, language laboratory or computer installations may be in order if such facilities are reasonably available and if needed to answer worthwhile questions. Key personnel from such operations and educational administrators from systems having good media programs can occasionally be brought in to advantage. Either type of activity should be undertaken only when specific rather than general benefits are being sought and when the activity is conducted in terms of those specific objectives.

As with any teaching activity, the key to successful results with the problems approach lies largely in how it is conducted, in the competence and enthusiasm of the instructor, and in the skill with which he motivates interest, adapts his procedures as needed, and keeps the group moving ahead.

Problems can be dull things if treated in a dull manner as if they were headaches for which we are attempting simply to find the right pills. Or they can be exciting challenges to the prospective director or coordinator who sees in his chosen field of the media a chance to make major contributions to the improvement of teaching and learning -- the most important business there is.

Differentiations by Levels of Operation

We have not attempted in the foregoing discussion to differentiate between the administrative ideas which a media specialist must know, be aware of, and handle at different levels of professional responsibility. In our judgment, such an effort would be of questionable value in administrative study because the differences which do exist for these levels are of degree rather than of kind.

Essentially the same basic administrative concepts are needed by the beginner in the business as by one who directs a total program if both are to function at an optimum level. The latter, of course, requires added depth and skill derived from experience and from such specialized courses as school finance, school buildings, etc. But the fundamentals are the same for both.

At the theoretical level of graduate instruction and large system management, successful administrative experience on a fairly substantial scale is probably essential. Those who move into such positions in the years ahead will of necessity have, also, the breadth of knowledge of the whole educational system as provided by doctoral and post-doctoral work in a variety of related fields including communications, learning theory, higher education, educational technology, and the behavioral sciences. They will need these for the total job to be done and will derive added stature and confidence in the process for the administrative functions and teaching to be performed. But again, the administrative fundamentals with which these professionals are concerned remain essentially the same even though their application is more intricate and extensive.

Personnel and Facilities for Administrative Training

A formal training program of the type outlined above should have someone to teach it who is trained, experienced, and well qualified as an educator, an educational administrator, and an educational media specialist. This is a large order which can probably best be met in most institutions by a team approach. Whether or not an individual is available with the breadth and depth of experience suggested, it will be a decided advantage for the levels of concepts proposed in the outline to have access to specialist on the Education faculty in such areas as administrative theory, supervision, finance, law, school buildings, and business management.

There are obvious advantages in having a strong media program in operation on the campus where formal administration course work is provided. The team referred to above can perhaps be recruited in part from the professional staff of such an operation. Work and observation opportunities for administration students are readily available; and needed materials, equipment, and productional facilities are close at hand.

Assuming that the relatively limited amount of materials and equipment needed can be otherwise provided, however, and that good school media programs and personnel are reasonably accessible, a good job can be done with the media administration course without special facilities. Facilities and equipment are needed in considerable amounts, of course, for the basic work media specialist candidates should have before coming into administrative training, but this is a matter for another paper.

A Look Ahead

1. Computer Use in Administrative Training. The possibilities of using computers in some aspects of administrative training for media people are worthy of investigation. Computers are now being used successfully in business management courses at MSU through the device of business "games." Programed problems which have been set up in the computer are assigned for study to teams of students. They work out their solutions, have them coded at the Computer Center and fed into the machine. The computer analyzes each solution in terms of a complex of factors and provides a read-out giving the analysis and the probability of success on each count.

2. New Sources Needed for Media Administrators. The supply of educational media specialist-administrators of the types described in this paper is far short of current demands. Should the technological revolution predicted by Finn move into education in even a small way during the next few years, the demand for such individuals would appear so farin excess of present sources as to constitute a major crisis for the media field and for education. It seems essential that the problem of manpower needs be given immediate and concentrated attention.

   Without question, the usual sources of candidates will be developed to the utmost Additional people may be found among the ranks of school principals, supervisors, school librarians, and teachers. It seems clear, however, that these sources of themselves will be insufficient and that we will be faced more and more during the next decade with media programs under the direction of people with few, if any, professional qualifications for the job.

   This means that we must face up to the possible alternatives including increased specialization within the program organization and possible recruitment from outside of the ranks of education for some of the functions now performed by media specialists. The function of administration itself may be one of these.

   It is quite common in industry these days to recruit top management personnel from other industries of quite different types. Management, in other words, is treated as a discrete function and one quite separate from the product or service being sold. While there are obvious problems and dangers in applying such a pattern to education, it may, in the writer's judgment, be worth looking into.

There might be quite a few junior and senior executives in business and industry who are fed up with it and who would welcome the opportunity to apply their organizational skills to the educational enterprise if suitable ways could be found for them to do so. The trick here would be to assure the maintenance of sound educational policy while giving such men sufficient authority and responsibility to function.

The writer has been increasingly concerned at the mass of administrative detail with which his staff is involved. This problem is quite general in media programs throughout the country and is compounded as the programs develop. If we are to practice what we preach and give priority to those educational activities which others cannot do for us, a solution must be found to this enigma. It may be that the use of professional administrators can help. In any case, it is our administrative responsibility to find the answer.

PART II - E

A "COMMUNICATION APPROACH"

George Gerbner
University of Illinois

I would like to state, at the outset, my assumptions about the functions of this paper and of the occasion for which it is written. The relevance of what follows depends largely on the extent to which these assumptions are correct and are shared by others.

My assumptions about the functions of this paper are the following:

1. This is to be a personal statement. It is to present a view of, and an approach to, problems of the preparation of educational media specialists from the vantage point of the contributor. It is not to summarize research or "cover" literature, etc. in the field.

2. The purpose of the contribution is to stimulate discussion and to help set the stage for further development of ideas and plans.

My assumptions about the nature of the occasion are the following:

1. The paper is intended to be a working document and discussion material for a series of invitational seminars which will consider basic definitions and directions to be proposed for the professional preparation of educational media specialists.

2. The need for such basic definitions and directions arises from the fact that the tasks and responsibilities of educational media specialists call for preparation in a newly emerging field of higher (graduate) education.

The broadest context

The task as I see it involves not only the development of a catalogue of more-or-less related duties and of the corresponding training requirements. I don't think that a legitimate and convincing claim for a program of professional and graduate education can be made without first developing the conception of a discipline which makes a unique and necessary contribution to knowledge.

The development of such a conception rests on one's assessment of the state of knowledge, and on one's view of what are the fundamental questions involved in proposing a program of graduate education.

My view is that this is a time of ferment and of stock-taking and redefinition in many fields. It becomes necessary, therefore, to conceive of the role of the educational media specialist not only in terms of a parochial past history and of present grooves of thought and practice, but also in terms of the emerging new organization of knowledge. Thinking in those terms, the fundamental question is: What is new about life, society, and the world? What is the emerging organization of knowledge? Is our "specialist" involved in this general ferment in any fundamental way? Does he or can

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he command abilities and resources which can play a vital and basic role in the shaping of disciplines and of professions now taking place?

I think there is much that is new, he is deeply involved, and he can play such a role.

The impact of three revolutions is changing the shape of human affairs. The industrial revolution transformed man's material relations to man, society and nature. The nuclear revolution made the traditional intercourse of nations obsolete. The communications revolution telescoped and extended the industrial and scientific explosions into the educational and cultural sphere.

This is what I believe to be the broad context in which the functions and responsibilities of the educational media specialist need to be located. This is the context in which I would like to approach the nature and relevance of the "communication approach" to human affairs in general, and to our specialist's tasks in particular. And this is the context in which I see his contribution to knowledge and the problem of his graduate preparation.

What is a communication approach?

Next I would like to define a "communication approach" more precisely, and to indicate its relevance to the problem.

I define communication as social interaction performed through messages. I define messages as formally coded, symbolic or representational events of some shared significance in a culture, produced for the purpose of evoking significance.

My distinction between the "communication approach" and other approaches to human behavior rests, therefore, on the extent to which (1) messages are germane to the process studied, and (2) concern with the production, nature, and uses of messages is central to the approach employed. A "communication approach" (or theory or discipline) can be distinguished from others in that it makes the nature and role of messages in life and society its central organizing concern.

The relevance of such an approach to the educational media specialist is three-fold. First it locates him in time; in relates him, his tasks, and his responsibilities, to a profound historic transformation taking place. Secondly, it locates him within the emerging new organization of knowledge. And third, it promises to give some focus and direction to the professionalization of his field. All three are necessary requirements for graduate preparation.

An historical perspective

The educational media specialist is actively involved, whether he knows it or not, in the cultural explosion which is changing not only education but society and the world as we used to know it.

To take the full measure of this transformation, we have to reflect on just how it was that a group of primates became homo sapiens and how homo sapiens is "humanized" today.

For at least a humdred million of the last 101 million years, lush forests covered most of the land. Arboreal existence freed the forearms of some of the mammals from having to support the burden of the body. One group of primates developed these forearms into strong, sure, delicate instruments. Along with the hands, this group of hominoids developed the ability to "comprehend." Millions of years of human evolution is compressed in the word "comprehend": it stems from the expression "grasp with the forehand." The ability to grasp with the hand and with the mind literally developed "hand-in-hand." Exceptionally deft manipulation, superior grasping, throwing, chipping, carving, and weaving required an exceptionally large and complex control system: the brain.

The last million years robbed hominoids of their arboreal "paradise." Periodic invasions of glaciers sent them roving into all habitable parts of the globe. Huddled in cold valleys, flooded during the warm spells, the featherless and furless but luckily warm-blooded creatures were hard-pressed to develop all their resources.

Fortunately, the hominoid brain was adequate. It could not only regulate the body, coordinate the hands, focus both eyes on nearby objects, and respond to immediate changes in the environment--all of which were important--but it could also do something no other primate could do. It had the reserve capacity and mechanical calm necessary to hold an image long enough to reflect on it, record it, store it, retrieve it, and recall it when necessary. This ability to compose, hold, record, and recall images transformed hominoids into homo sapiens and enabled them to survive through collaboration, community and communication. Image-making and using was the prerequisite for the most uniquely humanizing element in this process, communication. Communication as we know it is the exclusively human ability to interact through messages which do not merely signal but which symbolize, represent, re-create aspects of the human condition.

For a long time the messages and images which composed the human fabric of popular culture were largely woven by the tribe and the village out of the same homespun yarn of everyday experience which also gave rise to the folkways of rearing, teaching, and preaching. The process was inter-personal. It was slow-moving and fixed as long as the local and limited circumstances which governed it were fixed.

Slowly, things began to change. More and more people became increasingly aware of cultural influences not of their own tribe or village. It became apparent that the common culture was a man-made system of messages and images which cultivated ways of rearing, teaching, and preaching, as well as of learning.

After a long, slow build-up, the industrial revolution burst into the cultural sphere. Instead of the age-old process of filtering down, of person-to-person transmission of most that ever comes to a human, we have the mass production and almost simultaneous introduction of information, ideas, images, and products at all levels of society. The basic cultural transformation of our time is in the media and the systems which cultivate ways of looking at life, society, and the world. It is in the processes and institutions which produce, organize, and distribute messages bearing man's notions of what is, what is important, and what is right.

This recent transformation has brought the "communication approach" into existence. This is what brought about our concern with the production, nature, and uses of messages in the acculturation process, and, in its more formal aspects, in the educational process. The field of the educational media specialist is rooted not so much in the pictures of Comenius (devotional texts have been richly illustrated many centuries before him), but in the really revolutionary practice of putting pictures as well as texts into books "programed" for wide distribution in popular education. It is rooted not in sights and sounds as such, but in the communications revolution which gave us technological means to produce and mass-produce and project and broadcast sights and sounds and images for all. And it is now coming full circle to ways of programing and linking message systems in integrated sequences of production, perception and response.

The basic challenge

The problem inherent in this transformation has two sides. One side is a technological problem. This requires provisions for the training of competent technologists. The other side is the policy problem. Technology precipitates but cannot solve that problem. That is what requires the preparation of professionals at the graduate level. Professionals are people who understand their relationship to knowledge and who are prepared to accept and to exercise policy-making responsibilities. I can see no other reason for professional training on the graduate level. Indeed, I consider it a perversion of the concept of graduate education to train technological experts ignorant of policy implications and unwilling or unable to assume responsibility for policy choices.

This is the really difficult part of the problem. As Charles F. Hoban wrote:

> The problems of new media in education, as with almost all the problems of new technologies, are not those of the mechanics or the machinery involved. The engineers and the technicians do a reasonably good job with the mechanics and the machinery of technology. The real difficulty is more complex. It arises from the reorganization of procedures, the introduction and wider use of management on a higher level of skill, the changing role of the men and women in the process or the system, and the elevation of goals made possible by the productivity of technology.*

The basic challenge, as I see it, is to develop a program of graduate education which is based on the degree of technological understanding necessary for policy-making, and which concentrates on the professional aspects of the problem. These aspects are based, in my view, upon a specialized concern with the nature and role of messages in the life, culture, and education of an industrial society, and upon an understanding of the relationships between technological communications systems and the nature of knowledge. An application of these concerns and understandings to teaching and learning is the special institutional responsibility of the professional educational media specialist.

A program of graduate preparation based on such assumptions would include consideration of (a) the communication process; (b) the development of communication systems in society; (c) the relationship of communication systems to social and educational systems; (d) the general and the specialized contributions of communication processes to knowledge, teaching, and learning under different social and institutional circumstances; (e) the nature and functions of communication means and controls in the classroom, school-system, educational system, and social system, in relation to educational aims and goals; and (f) the specialized institutional role and responsibility of formal education in the cultural transformation of industrial societies.

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* Hoban, Charles F., "The New Media and the School." AV COMMUNICATION REVIEW, November-December, 1962

Some content suggestions

It would be presumptious to outline a course or a series of courses which might deal wich such content. The specifics of program development always depend on the specifics of the personnel and of the institutional setting in which programs are developed. But it might not be out of order to illustrate how the bare bones of such a conceptual scheme might be fleshed out with concrete substance.

The communication process. Most conventional treatments of the communication process are not really concerned with communication. They tend to ask the questions of the learning theorist or the sociologist or the linguist or the information theorists--all of which are relevant--but not the basic communication question: what happens as we interact through messages? A careful consideration of that question would be one contribution of the "communication approach" to the preparation of the educational media specialist.

Such consideration would begin with the development of the concept of image as the biological, social, and cultural prerequisite to the "humanization" of homo sapiens and thus to communication and human learning. It would go on to analyze meaning in terms of the contribution of messages and message systems to image development and thus to behavior.

Study of the communication process from an essentially communication-oriented point of view would also include an analysis of what goes into the production and perception of messages, would develop a "grammar" of messages and message systems in functional communication terms equally applicable to pictorial and verbal "languages," and would submit the communication act both as product and as process to more intensive scrutiny than is usually done.

Communication systems. The concept of communication systems as organic components of culture, and as the cultural arms of dominant types of social organization, lies at the heart of the consideration of systems. The graduate training of the professional educational media specialist would include an historical view of the development of such systems, and a comparative view of communication systems in different societies. There can be no broad and realistic grasp of communication media in American education without some understanding of technological media systems as they reflect pre- and post-industrial organization of different types.

Contribution to knowledge. Consideration of message-image relationships and of communication systems prepares the ground for the study of normative (survival and welfare producing) functions of communication systems under different historical, social, and institutional circumstances. Discussion of administration structuring message systems; of science assessing qualities of correspondence, adequacy, and vaildity built into message systems; and of art enhancing clarity, believability, and general effectiveness of expression (including the imaginative incorporation of the insights of research) could be points of departure for developing notions of value and of responsibility inherent in the tasks of the educational media specialist.

Means and controls. Administrative and organizational functions in communication are of special concern to the educational media specialist as a professional contributor to policy-making. Controls are inherent in all communication systems. The more "technological" the means of message-production the more highly structured is the system of controls regulating the flow of messages. Without careful and competent consideration of the built-in controls characteristic of the means, the means tend to become ends in themselves to which educational aims and goals must be "adjusted." This is "instructional technology" with a vengeance. One purpose of graduate (or any) education of the media specialist should be to guard against it.

The institutional function. The communication revolution has changed the position of the teacher and the role of the school in modern industrial society. The school can no longer teach anybody anything in isolation from the mass-produced popular culture which teaches everybody something about all things. Formal education today has an institutional responsibility for preparing itself, and new generations of citizens, to learn about, learn in, and learn to guide the cultural transformation of our time.

The broadly-trained and conceptually equipped educational media specialist is likely to assume leadership functions in fulfilling this responsibility, as many of his American predecessors and his counterparts abroad have done.

*

None of this is intended to furnish a blueprint for a program. In line with the assumptions set forth at the beginning of this paper, I was more interested in stimulating the process of discussion and of planning by generating what seemed to me some fundamental considerations than I was in proposing a full-fledged program.

I am not sure that a series of seminars can do much more, either, than suggest a fulle and perhaps sounder set of considerations for program planning. I am convinced, however, that the validity of the claim for graduate training rests on the development of a program which makes a unique and needed contribution to knowledge, and which can prepare professionals willing and able to act in the light of that contribution.

PART II - F

"SYSTEMS ENGINEERING IN THE EDUCATIONAL ENVIRONMENT"

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Northrop Norair
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A. Some Principles for Synthesizing Jobs

1. Picture within the picture. The STEMS Project is designed to develop education and training programs in the field of Educational Media. These programs are shaped to produce specified competencies at "pre-service" and "in-service" levels. The "pre-service" level is normally characterized by college-centered education while the "in-service" area is satisfied by job-centered training. The separation of education and training traditionally has been obscure.

   Viewing STEMS from one vantage point, we observe that the participants are engaging in a two-phase effort. First they must analyze the existing job of the Audio-visual Communication Specialist, and next must synthesize the newly emerging job of the Educational Media Specialist. Obviously, one should not ignore the past and present in designing systems of the future.

   Analysis is customarily a method operated intrinsically by an analyst but performed upon an extrinsic system. This tends to provide emotion-free and objective conclusions. When the analyst is called on for a "self-analysis" only the most disciplined minds can reach and maintain objectivity and system stability.

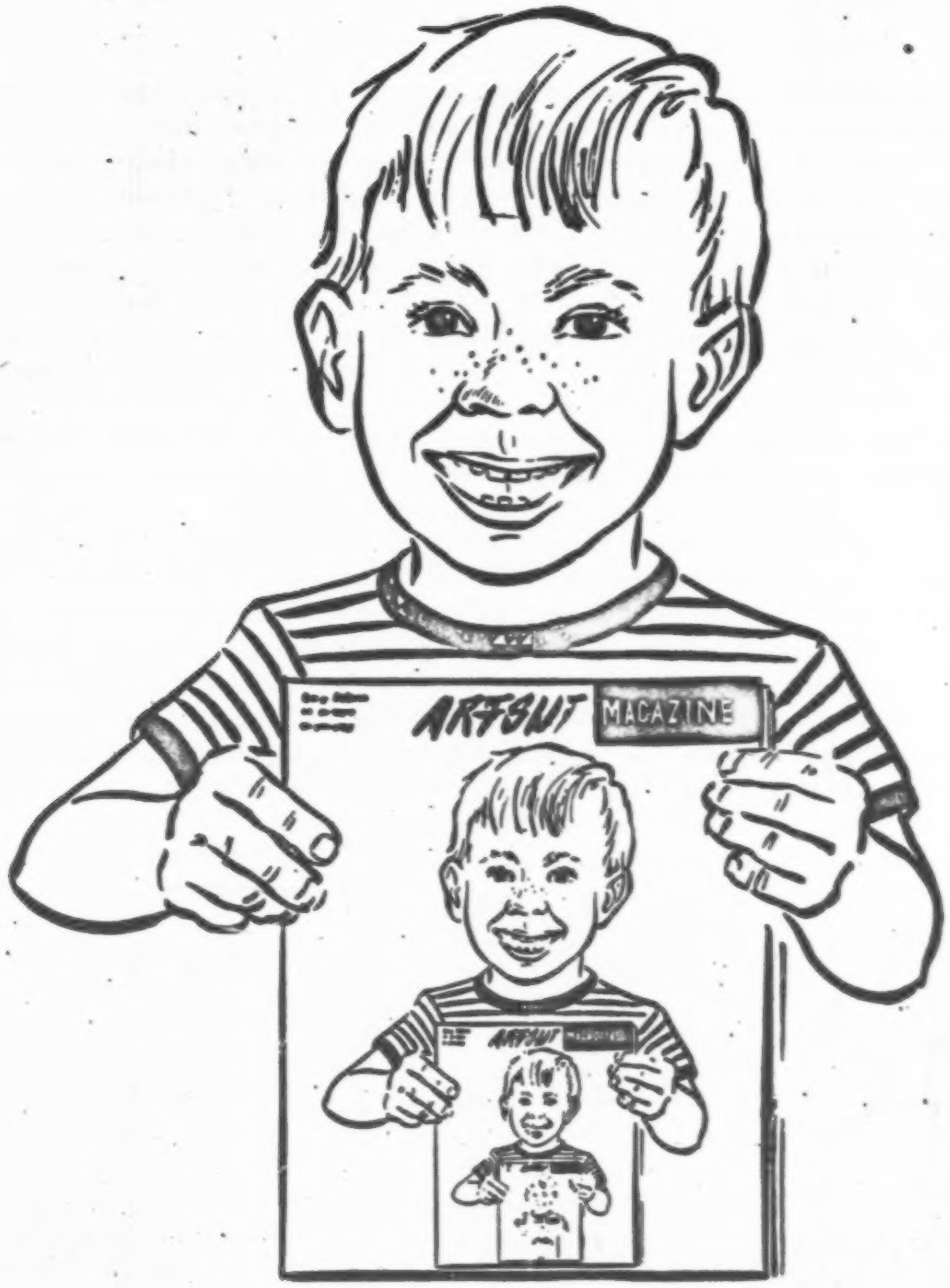
   The environment described by STEMS may be likened to the multi-colored cover of a popular periodical. On it is a boy looking at the front cover of the same issue of the same periodical. A closer examination reveals that the boy on the second cover is glancing at a third cover which shows the same boy studying the fourth cover of identical design. We count four boys and covers and manage to identify the fifth but the lithographic process now limits the detail and we merely assume that this picture will continue to be found within itself ad infinitum and possibly ad nauseam!

   (See cut on page 2)

   We wonder whether the artist began with the largest cover and worked his graphic display down to the smallest or.....did he begin with the smallest and work up towards the largest?

   The participants in STEMS must come to grips with a problem which requires an intensive and disciplined self-analysis followed by a carefully constructed synthesis. There is much to be gained by using both of the techniques available to the artist.

2. Relation of "training" to education. Since the beginning of organized instruction typified by classrooms, laboratories, school shops, structured conferences and work experience programs, there always has been disagreement regarding the factors which differentiate "training" and "education" (1). One group feels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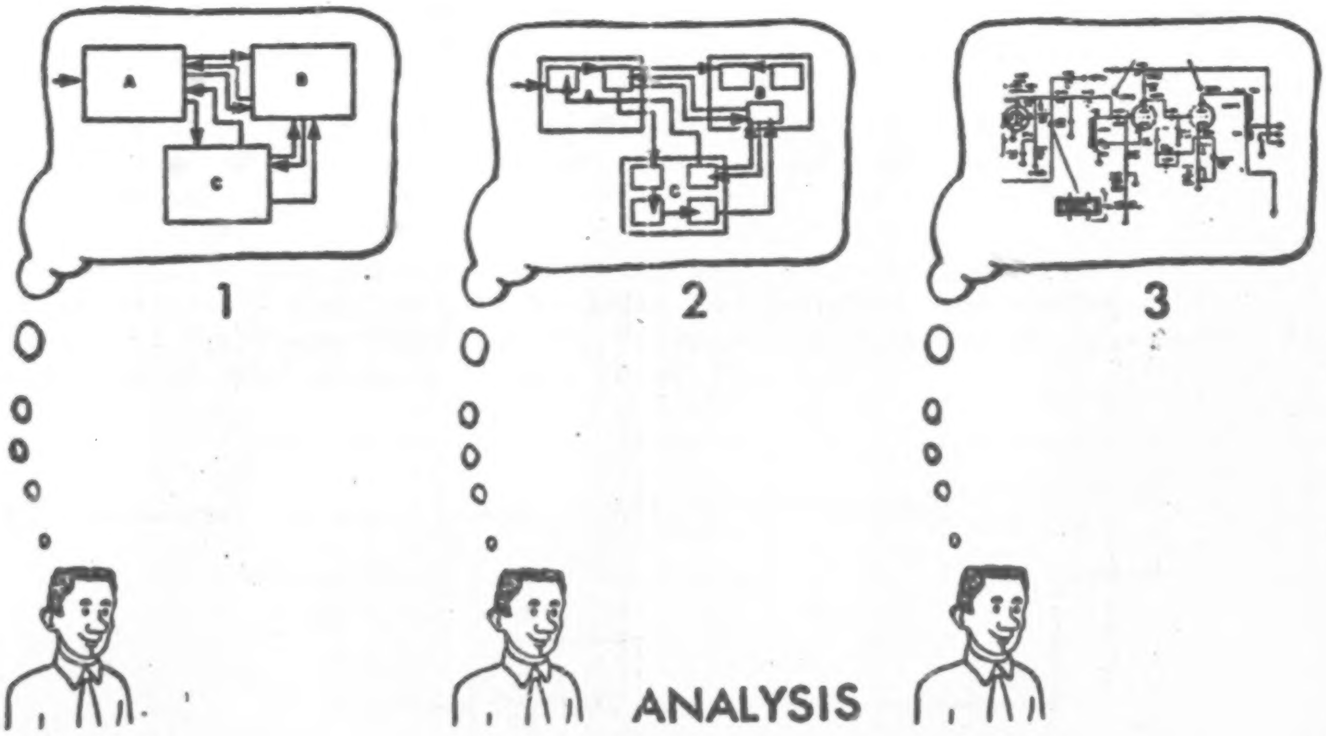
that there is no difference while another asserts that there is very little relationship...and there is always a school of thought contending that the "differences are not worthy of discussion, so let's get on with the show".

It is the position of this paper that the differences are great and of considerable significance. Therefore, those who are attempting to analyze an existing job and then synthesize an emerging job will be forced to grapple with methods of producing technical competence in Educational Media Specialists of the future.

"Education" is the process of developing human beings so they die smart. It is the maturation of the "whole man" to face and solve the problems of life. It is a cradle-to-grave, womb-to-tomb continuum meeting all learning needs of an individual. "Training" is the process of preparing youth and adults for a specific, short-term (as compared with a lifetime) objective. It is the shaping of that part of a person which will face and solve a narrow and specialized kind of problem. It is often a discrete solution synthesized from distinct and separate skills and knowledge. It meets specific and immediate learning needs of the individual (1).

Later, we shall examine a proposal dealing with the "education" of the Educational Media Specialist and some suggestions for his training.

3. Differentiation of analysis and synthesis. It was mentioned earlier that the past and present should not be ignored in the design of future systems. The engineering terminology for the examination of an existing system is "analysis" from the Greek ana+iyein, meaning to loose up or to separate (2). A known or existing whole system when broken down into its constituent parts or elements, meanwhile retaining a meaningful relation of the parts to each other and to the whole, has been "analyzed". It is the method of analyzing, then, which exposes the past and present to view through a cosmotic relationship of its elements.

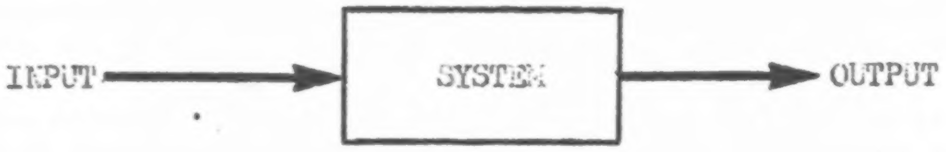


At the other end is "synthesis" derived from syn+tithenai, the Greek "to place with", widely used in engineering as a synonym for invention, innovation, creation, design. Invention when viewed as pure is essentially uncontaminated by an existing system and the end product is produced as a result of "synthesis"...the process of combining primarily non-related elements into a meaningful relationship such that the product is a "whole" system.

However, the transition to a new system from an old one quite often involves a repair and modification of the old. This is our "grayarea"! There are occasions when an existing system is either beyond repair in terms of demands upon it to perform or when mere modifications are unable to satisfy the demands for efficiency or product.

The tools and techniques for producing a new system or for modifying an old system are incorporated in analysis and synthesis, individually in the pure sense, and in "analysis-synthesis" (or anasynthesis---to coin a word) when using the combined technique.

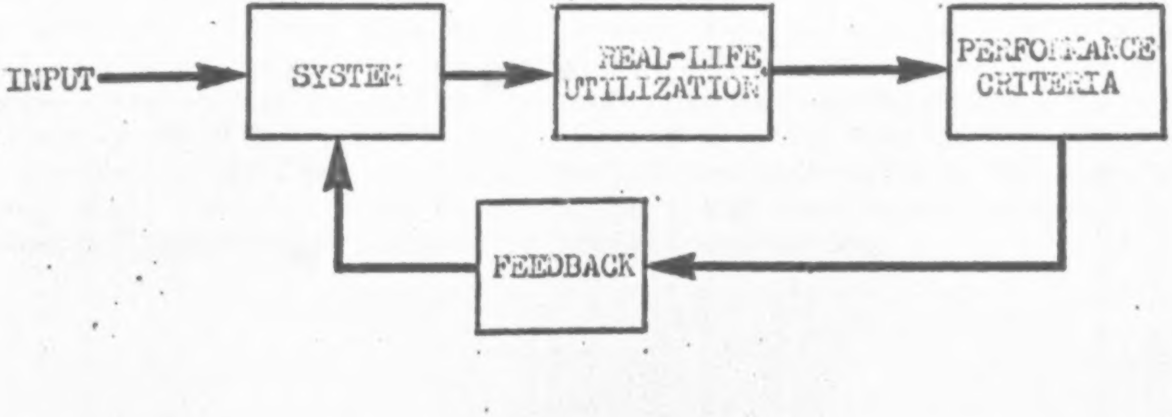
4. Performance. In engineering, a system is often depicted elementarily as a black box. The inputs or signals to the system are



operated upon by its intrinsic structure and signals or output appear at the appropriate terminas. The efficiency of a system is an external measure of its actual performance compared with its intended or prescirbed performance. This is in contrast with older philosophies which compare input and output.. which are internal criteria for evaluation. In simple systems, efficiency (%) is traditionally the ratio of Output/Input X 100. In complex systems, one cannot rely on "efficiency" alone. The ability of a system to perform within the limits established for it thru synthesis must be measured.

The internal system design which accounts for a modified output as the result of an earlier input is rated variously by such terminology as "gain" and "figure of merit".

The external system environment which requires the comparison of actual output with real-life requirements in order to "optimize" the system quite often refers to "performance criteria", "values" and measures of "goodness" (3). The basic diagram then appears in this form.



Here, if the performance criteria are not satisfied, an error signal will be fed back into the system. If the system is properly designed, the feedback will be correctly integrated and the output will change until the feedback reaches zero as a limit. Any changes in the real-life situation will produce immediate alteration of the performance criteria resulting in generation of feedback. Thus, an error signal is produced which will cause changes in the system itself until the feedback again reaches zero.

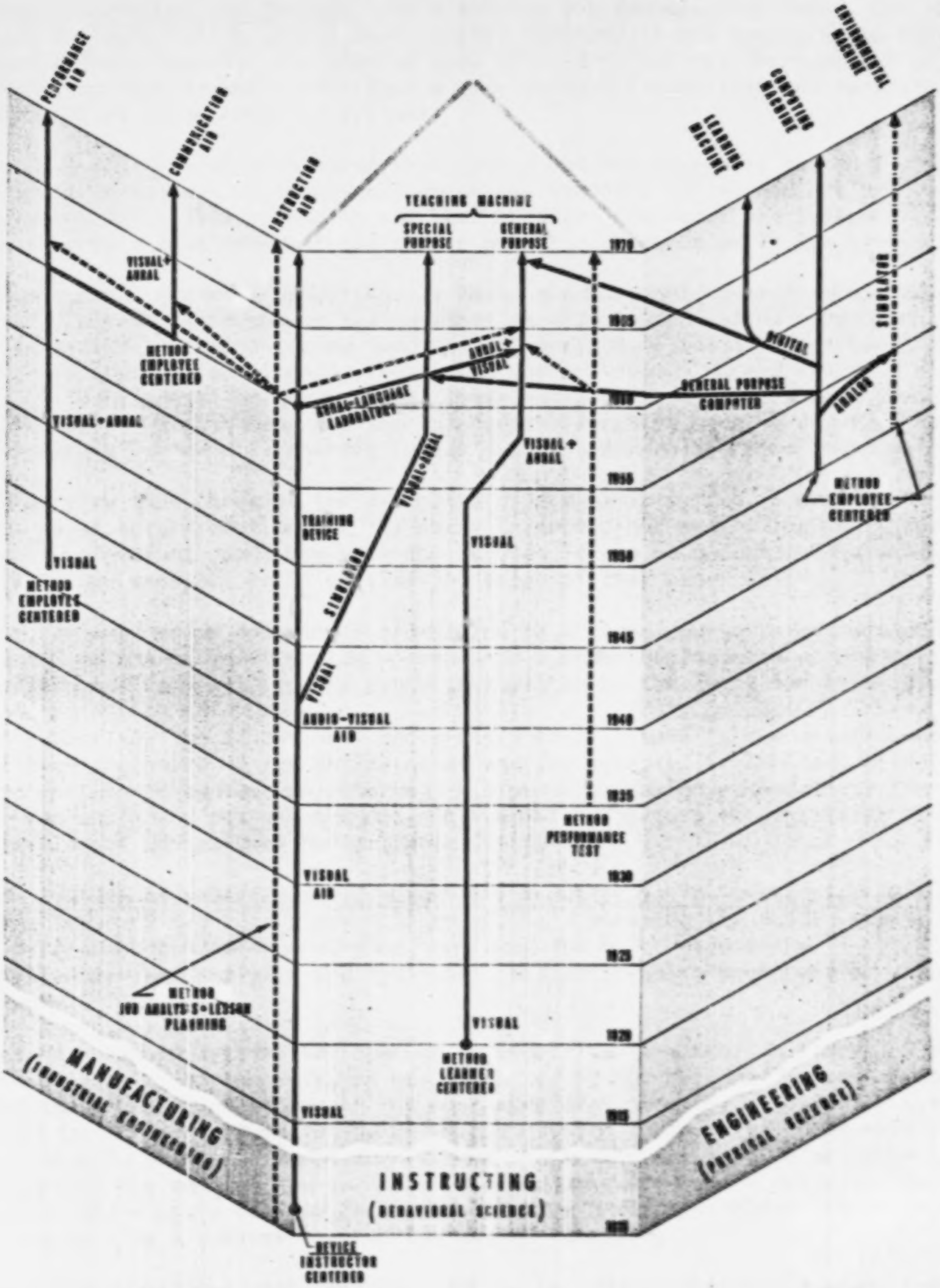
Education has boasted of a 40-year time delay between the detection of a stimulus in the real-life situation, known by vocational guidance counselors as the "world of work", and the response to the stimulus in the academic environment. Within the last 10 years we have experienced an awakening by academicians to the need for shorter delays in the S ⟶ R time continuum. Perhaps this is due only partly to shorter fuzes!!! Participants in the STEMS Project should consider the real-life "performance" aspect of systems engineering including a fail-safe feedback mechanism to maintain a dynamic and environment-sensitive system.

5. Systems philosophy applied to job preparation. Systems logic applies to very small systems as well as very large ones, although most of the reliable literature deals with the latter (4). It is a position of this paper that analysis and synthesis methodology applied to systems of any magnitude or complexity accompanied by performance criteria can result in the modification of existing systems and the production of new systems regardless of the occupational field.

   The Educational Media field is apparently at a point in time when those who control its destiny must choose both a direction and a Mach number (5). This, then, is an opportunity to apply systems thinking, either to modify the existing system or to invent a new one. Probably invention will turn out to be the better process for this professional field.

B. Systems Engineering Methods for Education. A good place to start an investigation of systems engineering is in the university system itself. The first attempt to teach systems engineering on a formal basis was probably made in 1950 at the Massachusetts Institute of Technology by G. W. Gilman, Director of Systems Engineering of Bell Telephone Laboratories (2). The expression "system analysis" was introduced by the RAND Corporation about the same time. The roots of systems engineering thinking, however, go back in time much further to the 1930's when RCA was engaged in developing television broadcasting services.

In 1961, representatives of nearly all accredited Departments of Electrical Engineering in the United States met at the University of Pennsylvania to discuss "systems engineering" (6). At one institution, a Department of Systems Engineering operating at undergraduate and graduate levels has been established separate from the classical divisions of engineering. It became quite clear that the physical sciences and engineering, because of the rapid onrush of technology, would be first to face the systems problem. To some extent, the pressure of scientific research and development in industry and at university research laboratories, has contributed to this. Government finding has generated research outcomes quickly convertible into Hardware and software. We might observe that, having created complex and fantastically detailed supra- systems, we are now inventing suitable methods for controlling and expanding them. It is indeed fortunate that the time delay between real-life invention and educational support is rapidly decreasing.


PERFORMANCE AID
COMMUNICATION AID
INSTRUCTION AID
TEACHING MACHINE
SPECIAL PURPOSE
GENERAL PURPOSE
LEARNING MACHINE
COMPUTING MACHINE
ENVIRONMENTAL MACHINE
1970
1965
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1915
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VISUAL + AURAL
METHOD EMPLOYEE CENTERED
VISUAL + AURAL
VISUAL
METHOD EMPLOYEE CENTERED
AURAL + VISUAL
AURAL-LANGUAGE LABORATORY
VISUAL + AURAL
VISUAL + AURAL
TRAINING DEVICE
VISUAL
SIMULATOR
VISUAL
AUDIO-VISUAL AID
VISUAL AID
VISUAL
METHOD JOB ANALYSIS - LESSON PLANNING
VISUAL
METHOD LEARNER CENTERED
METHOD PERFORMANCE TEST
DIGITAL
GENERAL PURPOSE COMPUTER
ANALOG
SIMULATOR
METHOD EMPLOYEE CENTERED
MANUFACTURING
(INDUSTRIAL ENGINEERING)
INSTRUCTING
(BEHAVIORAL SCIENCE)
ENGINEERING
(PHYSICAL SCIENCE)
DEVICE INSTRUCTOR CENTERED

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1. Human Communications Systems. In examining the accompanying Chart, one can see that movements which were once virtually independent are beginning to have inter-disciplinary impact. The opening gun, cira 1955, was the introduction of the computing machine which permitted a considerable flexibility and versatility in controlling newly invented systems.

   It is a position of this paper that method and not device is the most critical element in systems engineering; convenient synonyms for method are program and software (7). This is not to say that hardware (devices) are insignificant... it is simply that the real control in a system is embodied in the method.

   In the panel marked INSTRUCTING, is found the movement identified as "Instruction Aid". Like most movements having roots in what may be called "traditional" or "classical" education, it evolved through periods of trial and tribulation and through eras called visual, visual aid, audio-visual aid, and training device. As an independent luminary, it has contributed to younger movements through the "Simulator" which became the Special-Purpose Teaching Machine and the "Language Laboratory" which will shortly impact upon the General-Purpose Teachine Machine.

   If we view this Chart as the synthesis of a dynamic system in graphic format, the major inter-relations of the parts to each other and to the whole system begin to emerge. Just how vast this system is can be postulated by science-fiction writers but it is outside the scope of this paper (8)!

   The 10-year period from the introduction of a first course in systems engineering at MIT to the university-wide Workshop on Systems Engineering at Pennsylvania corresponds very well to the dynamics depicted by the Chart for 1950-1960.

   To summarize, the Educational Media field finds itself in the excellent position of becoming aware of its deficiencies and inadequacies concomitant with the recognition of systems engineering as a powerful design methodology. How convenient! Why not use systems engineering techniques to synthesize the position of Educational Media Specialist (9)?

2. How Systems Engineers are "educated" for industry by the university system. Dean Ryder of Michigan State University, in discussing the future trends in electrical engineering education, believes the major emphasis will be on two areas: systems analysis and synthesis, and solid-state phenomena or materials theory (10).

   The Workshop on Systems Engineering in Electrical Engineering Education held at the University of Pennsylvania was supported by the National Science Foundation and the proceedings represent the most complete inventory of existing systems engineering curriculums in the university system to date (6). One must be cautious in examining these curriculums since they are heavily oriented to develop engineers and much of the technical content described while essential for the engineer would prove useless to the Educational Media Specialist even though both are acquiring a systems engineering way of reasoning.

   With the conviction that sharp boundaries between traditional engineering fields should be deemphasized, Case Institute of Technology in 1961 combined chemical, civil, electrical and mechanical engineering into a single division. Systems Research Center for research and graduate studies was created to concentrate on systems engineering and to bring together the many disciplines for this purpose. This Center "expects to assist graduate and undergraduate students in developing a realistic understanding of systems analysis". The MS and PhD degrees with primary emphasis on systems study are awarded. Course topics include systems science, methods of systems analysis, communications, control, performance criteria, model making, optimization techniques in synthesis, reliability and human functions. Dr. Nara, in his summary, expressed his belief that systems engineering should be applied "to new systems with nonphysical elements to test and develop new generalities" (6a). This approach is reminiscent of Stevens Institute of Technology and the University of California, Los Angeles, philosophies in undergraduate engineering.

The University of Arizona has created a separate Systems Engineering Department, with continuing departments of civil, mechanical and electrical engineering, all equal organizationally. It administers both undergraduate and graduate programs. The emphasis on mathematics is based on the knowledge that while mathematics is used in the classical engineering specialties as a vehicle to apply physical concepts, in systems engineering it is a tool for handling complex logical relationships. Dr. Wymore asserts that systems engineering has little to offer "simpler systems" but traditional engineering has little to offer "complex systems" (6b). The undergraduate curriculum in systems engineering generally takes this form:

credit hours		
77	common engineering	
18	human factors	6 psychology 6 physical-cultural anthropology 6 economics
24	mathematical models	6 advanced calculus 6 probability-statistics 3 matrix analysis 3 numerical methods 3 analog computer programming 3 digital computer programming
12	systems theory	6 operations analysis 3 automatic control 3 machine logic
9	elective	- advanced programming - data processing - theory of games - advanced mathematics

However, the next tentative curriculum revision is expected to produce a slightly different distribution:

credit hours	
77	common engineering
15	human factors
18	mathematical models
15	systems theory
15	senior design project or thesis
140	

In the graduate curriculum, we see this structure:

credit hours	
6	human factors in engineering design
6	principles of systems engineering
6	thesis
12	elective for thesis research
30	

The Moore School of Electrical Engineering, University of Pennsylvania, in 1953 first offered a formal curriculum in this field. It was designed for those with MS degrees in electrical engineering (6c). The years have produced certain changes in the curriculum and the tendency is to develop individualized sequences. The cornerstone is the "seminar" which seems to divide into thirds:

1. Lectures - faculty — Systems Engineering
    - problem formulation
    - data gathering
    - model construction
    - model analysis
    - development of conclusions
    - dependence on assumed parameters
    - problem presentation
    - implementation
2. Presentations - students
    - development of subject area
    - library research
    - presentation to group
3. Specific Problem

Students in following individualized sequences usually select from these areas:

control
- feedback control
- theory of control
- sampled data control systems
- digital filters
- adaptive control processes

communications
- random processes
- information theory
- statistical theory
- communications systems - modulation theory
- radar systems

computer
- formal languages
- numerical analysis
- theory of automata
- applications of digital computer systems
- computer complexes

probability & statistics	probability statistics statistical analysis of stationary time series

The Carnegie Institute of Technology has a Ph.D. level interdisciplinary program involving the departments of electrical engineering, mathematics, psychology and the Graduate School of Industrial Administration. The curriculum subdivides into:

mathematical foundations	analysis logic combinatorics probability statistics
system techniques	analysis of dynamic systems flow-transformation of information statistical communication theory continuous feedback systems computer logical design theory of programming mathematical linquistics simulation enalog devices numerical analysis
system types	ranging from human-centered to completely artificial systems

Dr. Reitman avers that the program is developing slowly and that the reduction of the problem will take time (6d).

While many institutions offer courses in systems engineering on an elective or occasional basis, the schools described have reached degree status on a formal basis.

3. How Systems Engineers are "trained" in industry. If a count were made of the companies in the United States providing formal training in "systems engineering", the magnitude would be very disappointing. The group of persons most concerned with this vacuum are the engineering managers who, operating under a wide variety of technical titles, are responsible for coordinating the activities of large numbers of engineers and scientists.

Skifter contends that the management of systems engineering projects requires a unique combination of administrative and technical skill (11). Yet, while this is generally admitted by corporate managements, there are virtually no formally operating training programs in business and industry to fabricate systems managers or systems engineers. Instead, young engineers move about either randomly or by design and absorb thru osmosis whatever it is they need to become systems engineers.

Partly, this is due to the newness of the field, but there is also a serious problem relating to methods used in industry to train company employees. In most instances, training has been a "personnel department" function. Because of the highly technical training programs necessary for producing systems people, there is a growing trend to relocate the responsibility for this function in the technical organization (12). As this continues, perhaps more formal company training in systems engineering will be provided. The burden of providing formal instruction in this interdiscipline remains with the university system.

It is only in the engineering and physical science disciplines that the communications channel with business, industry and government is both wide and short. Yet, the dynamics of technology strongly suggest that company training programs translate university courses and curriculums into systems engineering into the specific software and hardware training programs which engineering managers must have at their disposal to do an effective systems job. Details of such training programs are not readily available for analysis by STEMS participants.

4. The Relation Philosophically of Engineering to Education. Finn has devoted considerable attention to the need for systems thinking in the Educational Media field (13). In the process of a literature search, he came across several papers by W. W. Charters which refer to the "educational engineer" (14, 15, 16).

Charters was very close to one aspect of engineering analysis when he referred to curriculums as "....being systematically based on analyzed functions rather than traditions" (14). An examination of the JOB ANALYSIS & LESSON PLANNING movement on page 6 illustrates that it had origins going back to Herbart (17). There is unsubstantiated evidence, however, for the claim that he "was the father of 'job analysis' ", and that "... his 'brain child'... (was)... 'job analysis' " (18). His interest in the transfer of engineering methods to education was undeniable; the published phrases which are quited lend testimony to his foresight and interdisciplinary approach:

> "...there is need for the engineering concept in education..." (14).
>
> "...the difference between engineering and education is one of degree rather than kind..." (14).
>
> "...engineers have developed techniques of application which are more efficient and more numerous than those which educators have developed.."(14).
>
> "...an idea...may be analyzed and integrated with other ideas into a system...." (15).
>
> "...the (educational) engineer will identify the idea to be worked upon, analyze it...select promising hypotheses...experimentally plan with plans...build the unit...try it out in practice...test the results... these engineering methods will be perfected in the light of experience and practice, and a growing body of educational engineering techniques will develop over the decades" (16).

It is the position of this paper that the method most useful to Educational Media Specialists is represented by a modified version of systems engineering. It is also a position that, while many individuals have carelessly or by design associated "systems engineering", "systems thinking" and "systems approach" with education, this has been wishful thinking rather than accomplishment.

5. Thoughts on "educating" and "training" a systems-oriented person.

"System" by definition and utilization involves analysis and synthesis. However, "systems engineering" predominantly is identified with analysis and, in traditional engineering disciplines, the education of engineers is design-centered. Designing is a technique firmly associated with synthesis.

It should be obvious by critically reviewing the methods described in B2, above, that there are fundamentally two schools of thought regarding the development of a "systems-oriented" person. One believes that you first educate for synthesis and actually develop a designer--a component-minded engineer; then you reprocess him thru graduate work for analysis and end up with an analyzer--a systems-minded engineer. In this manner, a hybrid is produced!

The other contends that you provide only sufficient general engineering to establish a crude occupational frame of reference, immediately begin to develop systems thinking and continue on with graduate work until a polished systems engineer has been fabricated.

It is a position of this paper that the two ideologies represented do not involve a matter simply of degree or proportionality. It is believed:

a. the sequence of synthesis followed by analysis in education is critical.

b. the absence of, or the minimizing of, synthesis in educating is critical.

Further, it is believed:

c. there is a personality relationship involved which suggests that certain individuals prefer to be synthesists, are good at it, and encounter great difficulties when forced into the role of systems engineers or analysts.

d. there is an intrinsic conflict in an individual who excells at systems engineering or analysis and who is then instructed or assigned problems in synthesis at the component level of design.

e. the task of developing hybrids who, in a sense, are hermaphrodites able to shift their reproductive organs from analysis to synthesis upon command in the order of seconds, is difficult but not impossible.

A convenient illustration deals with business and industry. Large organizations tend to generate "corporate" or "general" offices which usually regulate the affairs of the "operating" divisions of the company. The magnitude of regularity is a function of the index of centralization. In some companies operating people are grown to move ultimately to the corporate offices; i.e., from being synthesists to analysts, viewing it as a management system. From time-to-time, corporate people are sent down to positions in operating divisions, where, it is assumed, they will use their "corporate visability" wisely in managing the suborganization. This "operating-level application of corporate visibility" is a function of years of corporate experience and extent of problem formulation and system integration.

The author raises these rhetorical questions: can one with long analysis experience and considerable corporate visibility suddenly shift to a position of purposely limited tunnel vision? Can one trained in telephoto vision really assume wide-angle visibility without gradual transition...can this be done at all...is it personality-limited?

In fact, the transition from employee to a first line-supervisory position is a shift from a synthesis-centered to an analysis-centered environment. This may account for many of the management ills in business, industrial and possibly government organizations.

Regrettably, time and space do not permit an exhaustive treatment of the techniques for training "systems engineers" in industry developed by the author; this must wait for another paper now in preparation.

C. Proposal for a College-Level Course in "Education Systems Engineering".

1. Should educators study engineering? There is much to be said for the earlier quoted contentions by Charters over the years. It is a position of this paper that engineering methods should be introduced into education---not that educators should obtain degrees in systems engineering! If the definition of "hybrid" is the mating of two different species, then what is preferred here is "cross-breeding", the mating of different varieties of the same species!

The influence of science and engineering on education is beginning to permeate national thinking. Dr. Van Atta, to whom the author reported at Hughes Aircraft Company 1958-60 prior to Van Atta's assignment in Washington to develop a program of research in arms control for the Department of Defense, is a physicist of renown. A recent issue of the American Psychologist carried his invited address to the APA Annual Convention in 1962 (19). A remarkable event!

However, some of the mathematical foundation described briefly in B2 above, can apply and courses already exist for this. It is not so much the mathematics which is of concern, but the conceptualization of analysis, synthesis and anasynthesis at both abstraction and application levels. Even the revered systems engineer has difficulty in expressing this conceptualization.

2. An experiment at the University of Southern California. In October, 1962, upon invitation to instruct a graduate course, Ed. IT 678, "Designing Instructional Systems", the author described it as

> "a seminar patterned after experimental courses in creative engineering at M.I.T. and other institutions. It is designed to remove the students from the ordinary, mundane and traditional world and confront them with extraordinary problems in the field of education. The objective is to develop a systems engineering viewpoint by grappling with real-life but unusual problems which require new and different solutions...systematic methods of systems analysis and synthesis are expected to be developed by the end of the 16th week. Technical lectures will be given when it appears the group requires special inputs to direct their thinking..." (20).

This course had not been instructed before. While the bulletin title, "Designing Instructional Systems" sounded traditional, if the word instructional were dropped out, it would appear to be more suited to the School of Engineering rather than the School of Education! In fact, a less legal but more precise label would be: "Education Systems Engineering", a seminar to conceptualize and apply systems engineering using non-mathematical techniques.

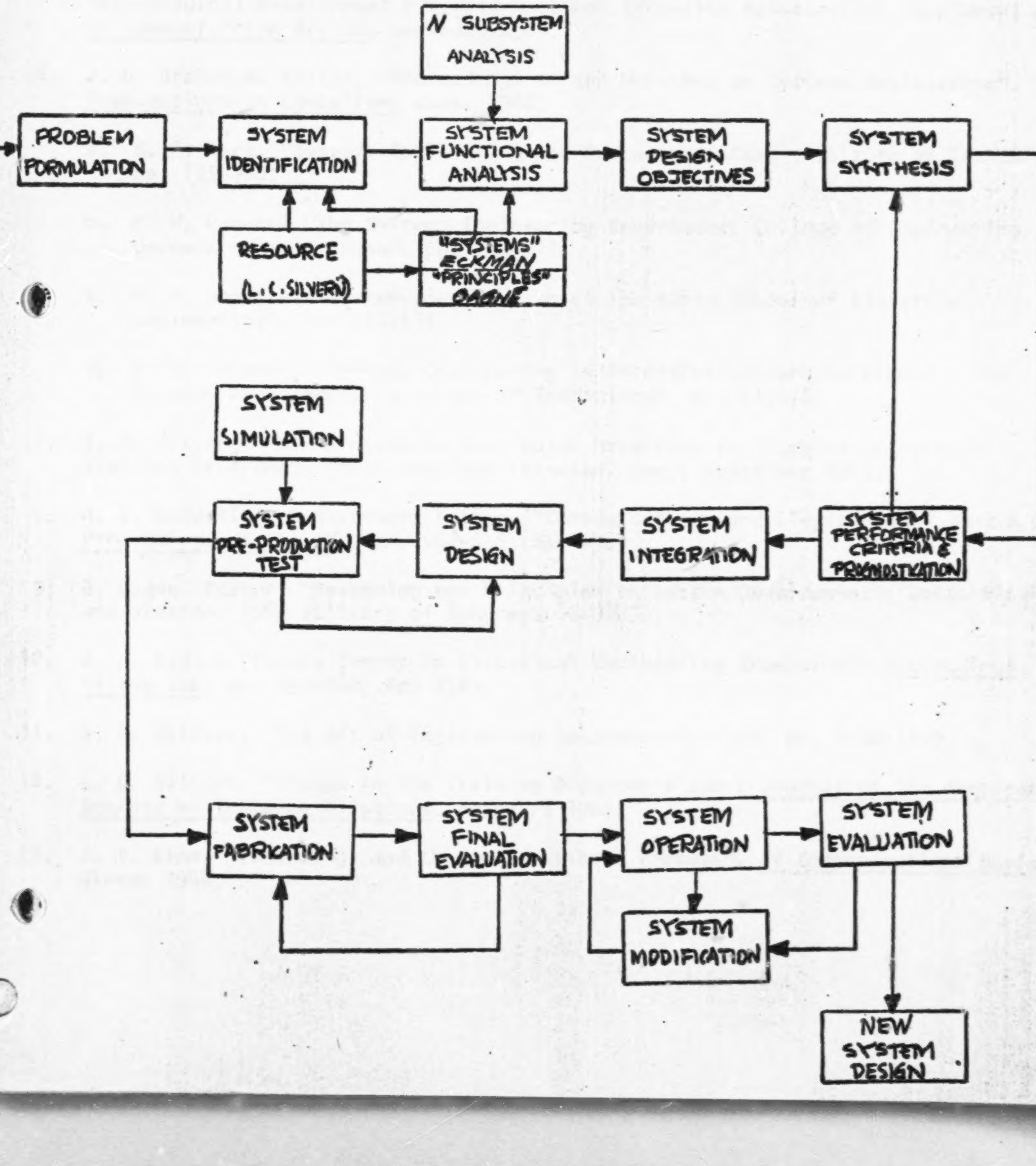
3. The Course Outline. Every course must have an outline; this is true in the university system particularly when the faculty member is "visiting". The author is pleased to close this paper by furnishing the Course Outline, Ed. IT 678, for use by STEMS participants in their deliberations. It is in systems language. Perhaps, by the end of the semester, sufficient data will accrue to suggest a more formal treatment of the experience.

UNIVERSITY OF SOUTHERN CALIFORNIA
GRADUATE SCHOOL
Los Angeles

COURSE: Ed IT 678 Designing Instructional Systems

MEETING: 6:30-9:10 P.M.; Feb. 13 - June 5 1963, ANX 101C, Annex 927 Hellman Way

COURSE OUTLINE


N SUBSYSTEM ANALYSIS
PROBLEM FORMULATION
SYSTEM IDENTIFICATION
SYSTEM FUNCTIONAL ANALYSIS
SYSTEM DESIGN OBJECTIVES
SYSTEM SYNTHESIS
RESOURCE (L.C. SILVERN)
"SYSTEMS" ECKMAN
"PRINCIPLES" GAGNE
SYSTEM SIMULATION
SYSTEM PRE-PRODUCTION TEST
SYSTEM DESIGN
SYSTEM INTEGRATION
SYSTEM PERFORMANCE CRITERIA & PROGNOSTICATION
SYSTEM FABRICATION
SYSTEM FINAL EVALUATION
SYSTEM OPERATION
SYSTEM EVALUATION
SYSTEM MODIFICATION
NEW SYSTEM DESIGN

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PART II - G

IMPLICATIONS OF PROGRAMED INSTRUCTION FOR THE TRAINING AND FUNCTION OF THE AUDIO-VISUAL SPECIALIST

Lawrence M. Stolurow
University of Illinois

General Considerations

In this paper the position taken is that the A-V educational media specialist needs to know the context in which he is working (education), what he wants to accomplish (learning or behavioral change), and the techniques and methods associated with the different media. Since he is an A-V specialist, this orientation is the communication process; he should be strongest in his knowledge of techniques and methods, but also, keenly aware of the educational context and the psycho-educational problems associated with the definition of objectives of instruction and the accomplishment of the teaching-learning process.

The A-V specialist's knowledge of techniques and methods of communication relating to the different media, should be clearly and definitely developed in relation to two types of problems: (a) when particular methods and techniques are to be used; and (b) how particular methods and techniques are most efficiently employed both to develop materials and to use them efficiently. The "when" and the "how" need to be highly developed in the curriculum and, in fact, at the higher levels of the specialty the "when" should be emphasized and at the lower levels, the "how".

With respect to programed instruction (P.I.), the A-V specialist's contribution to a team effort will be determined by his training. It is important, therefore, to look at the kinds of things he could do as a specialist on a team and, in this way, derive the types of training he should receive. In general, major P.I. efforts involve a team whose job is to develop programed materials, an instructional system, or both. Typically, the team has included only the subject matter specialist and psychologist; the media specialist has been absent but not because he is not needed. Too often the need for a person with the skills relating to communication and production of the educational materials for student use is unrecognized in the beginning of the effort. Adapting the specialized production technology to a P.I. format within a systems context can be a major part of a project and an industrial specialty. The value of early, rather than late, participation of a person with multi-media skills is apparent very soon after one begins work on the development of a self-instructional program. What seems to be required in large scale efforts of this kind, is a person who knows many different techniques, methods, and devices (equipment) useful in the production of P.I. materials. He also should be familiar with techniques in the use of the media. At present, it is the adaptation of media technology to the efficient production of P.I. materials that is the greatest current need. Knowledge of the technology of use, obviously contributes in significant ways to the development of materials Production and use are intimately related and their relationship needs to be developed in courses within the A-V curriculum. Furthermore, the place to begin is with the uses. Once these are clear then methods and devices for accomplishment can be related to them.

Before discussing the training of the A-V specialist, it may be useful to consider some basic points with respect to the concept of P.I. since they have rather direct implications for the role of the A-V specialist and therefore, for his training.

What is Programed Instruction?

By P.I. I mean that kind of instruction which is: (a) achieved by physical materials and therefore is replicable instruction with a high degree of control; (b) always individualized in its pace; (c) frequently individualized in its content; (d) both developed

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and structured from a behavioral analysis; and (e) perfected through systematic analysis of student performance data.

What is a Program?

A program is the specific content which is being taught, which is specified in relation to a set of clearly identified behavioral objectives, and which is assembled in a form that permits its controlled replication. A specification of instructional content includes three categories that must be considered in relation to what is being taught in a particular program. These categories are the transitional, the modular, and the terminal content. These categories get their name from their function in relation to behavioral objectives. They identify the parts of the program which relate to specific objectives, or goals, of instruction for that program. But since the very same steps might appear in another program with different objectives, the category in which a step is classified will vary depending upon the specific objectives of the program in which it appears. Consequently, a program is an integral thing but like any other integral of communication, it has a fine grain to its structure, the major components of which can be identified and examined in their own right.

Transitional content is the set of program steps used only as a means to an end. It is not the content which is used by the person who is already trained. It is used to train but not in the practice. It therefore, is content that can vary from program to program when the objectives are the same. For example, another English program could use different material to achieve the objective of a step which is written to teach the use of language to develop moods from that which follows.

> "With idiomatic writing we can convey a negative or undesirable tone by having the person say 'The world is going to the dogs.' On the other hand, a very different tone can be conveyed by having the person say 'He is a cool______.'"

Analogy and metaphore are particular devices that can be used to provide transitional material for a program. The analogy is a transitional content used to convey succinctly a set of relationships, but once these new relationships are learned, the analogy has served its purpose, which is to catalize the formation of a new set of relationships.

Modular content is that which is a piece of a whole, or larger unit. Learning to write the letters of the alphabet is a modular skill for spelling, but spelling whole words is modular for writing prose or poetry. An example of modular content in teaching statistics is this set of symbols == V, f_j, x_j^2, N, $\bar{X}^2$, $(\ \ )^2$ == which would have to be taught individually before the whole formula was taught. Like letters of the alphabet, each symbol must be learned before it can be used as a part of a whole. It is important that we realize that new tasks often reduce the adult learner to a low order of learning. In other words, we cannot think of rote learning as a type with which we are concerned only when teaching children. Any time an adult has to master a set of purely arbitrary associations he is learning by rote. Often in learning a new language such as the symbolism of statistics, of mathematics, or even of Russian, forces the adult to learn by rote; however, clever writing often can make the task one for an adult in which existing meaningful associations of the student can be brought to bear. If this is done, mastery can be facilitated and retention aided. Thus some potentially rote tasks can be made meaningful and usually with advantage. The problem in doing this, like the problem of introducing color into a communication is one of control over behavior development. In other words, if a piece of behavior is to be a module the way it is taught should be considered in terms of its eventual integration with another piece of behavior and not just in terms of the immediate objective of teaching it. The general principle here is that it is necessary to think of techniques and methods in terms of the total job and the terminal behaviors so that interference is prevented and not built in as a biproduct that is undetected.

Terminal content is that which represents the goals of the instructional program. For example, in a statistics program that teaches the formula for variance, a terminal step would be to give the student the cue: "The formula for V = _____________." Here he would have to write out the formula. However, it also should be noted that this same step could be a modular in a program that had a higher level objective, such as teaching the student to determine the statistic to use in arriving at a decision about a problem in psychology.

What is an Instructional System?

A training system is a heuristic model of the process of instruction which attempts to make explicit the elements and relationships that have to be considered when the engineering is accomplished for a learning task. As I see it there are ten basic functions.

In figure 1 we see a systems diagram in which the "fine grain" of the model is revealed as ten systems functions to be performed whenever instruction is automated to some degree. The degree of automation is determined by the number of functions accomplished by a device. Often the student accomplishes these functions for himself in semi-automated systems. The functions are the (1) display function where control is exercised so that only a part of the program is shown at a time; (2) response, either selection or construction; (3) a comparator function in which the response of the learner is compared with the correct response (performance standards) either by the learner himself or by the device for him; (4) knowledge of results, which is the immediate consequence of the comparison feedback to indicate correctness; (5) a collated=recorder function which records responses in relation to steps and makes possible the revision of the program based on data and the selection of subsequent materials, to meet individual needs; (6) selection, the sixth function, can be based upon a predetermined route, or upon a set of rules that would allow some individual variation; (7) Library storage is a function that has to be provided so that there is something to select from and its capacity and access time are critical parameters; (8) the program is a set of materials organized to fit a set of specific behavioral objectives; (9) the pacer-timer function is introduced where the requirement is to build up speed of response as in typing or card punching; and to do this, the system needs to adjust its rate to the student's response rate; and (10) data reduction function is the use of computational routines to determine student's scores and difficulties in the program that indicate the need for revision. These are the 10 tutorial functions. A completely automated system also would be capable of making the pre-tutorial decisions involved in selecting the strategy to use in tutoring.

What is a Teaching Machine?

A teaching machine is simply a formal system for implementing one, or more, strategies of instruction. Note that this definition makes a programed text and a scrambled text both a program and a teaching machine. These devices include content related to specified objectives and in addition implement a teaching strategy; therefore, they are considered here as both a program and a teaching machine. A teaching machine is basically a concept. Today's machines are examples of that concept, but tomorrow's may be very different from today's. The A-V educational specialist should be on the leading edge of that development. The simple mechanical devices which are so common today will soon disappear except for some limited use in special places and possibly in research where it is small in scale. These machines are useful for control of display and they should be "cheat proof" or not used. For research the student should write directly on the paper containing the content since the separate sheet of adding machine paper results in loss of data because it is not

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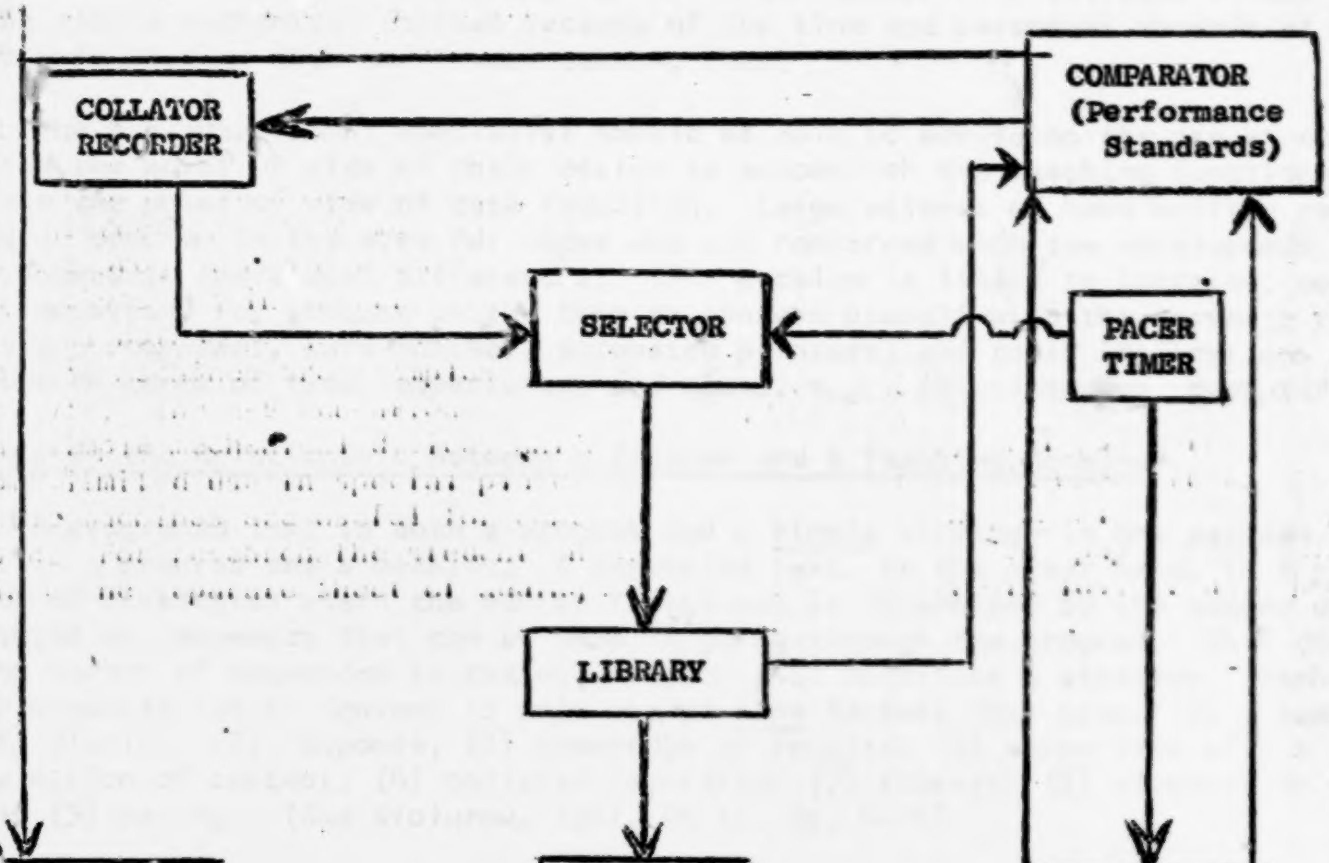
COMPARATOR (Performance Standards)
COLLATOR RECORDER
SELECTOR
PACER TIMER
LIBRARY
KNOWLEDGE OF RESULTS
PROGRAM
RESPONSE UNIT (Out Put)
STUDENT

Fig. 1. Adaptive teaching machine system showing 10 functions defining a teaching strategy.

a collated-record (see Stolurow, 1961). Book formats will increase in use and replace the simple mechanical devices because of the time and personnel demands of the machines both in loading them and in maintaining them.

The A-V educational specialist should be able to advise on the use of devices not only from the point of view of their design to accomplish the teaching functions, but also from the point of view of data reduction. Large volumes of hand written responses are a major problem in the area for those who are concerned with the development of programs to accommodate individual differences. This problem is likely to increase; consequently, it is necessary for someone on the team to concern himself with the research related media, (e.g., computers, card punches, automated printers) and their implications for data reduction in terms of time, experience, and means, e.g., calculator vs. computer.

What is the Relationship Between a Program and a Teaching Machine?

A programed text is both a program and a simple strategy in one package. Consequently, it is a program and a machine. A scrambled text, on the other hand, is a program and a set of strategies where the number in the set is determined by the number of different routes or sequences that can be used in going through the program. This does not mean the number of sequences is the only factor that specifies a strategy. Rather, the sequence or organization of content is only one of nine factors that specifies a teaching strategy; (1) display; (2) response; (3) knowledge of results; (4) comparison with a standard; (5) selection of content; (6) collated recording; (7) storage; (8) sequence or organization; and (9) pacing. (See Stolurow, 1961, Ch II, pp. 4-16)

It is important for the A-V educational specialist to be knowledgable about these distinctions for they have important implications for both the preparation and use of P.I. materials. The systems orientation is important in these distinctions for they relate to the function of materials within a teaching or instructional system.

The interface unit or device that both displays information and accommodates the student' response in a teaching machine, is an important focus of concern for the A-V specialist. In a computer-based teaching machine system one computer may be connected to as many as 1,000 interface units and all of them may not be alike. Their design will be determined by the behavioral analysis of the task and the statement of objectives to be accomplished. For example, depending upon the objectives and, in particular, the statement of terminal behavior, the display may be static or dynamic, verbal or pictorial, audio, visual, or both, etc. The interface is the focal point of communication from the teacher (i.e., the system) to the student and from the student to the teacher.

In the computer-based system the question of relationship between the program and the machine takes on the most significance. The display can become anything required for teaching, e.g., audio-visual, audio-tactile. It can use motion or static displays. It may be produced via film, TV tube, electronic blackboard, or printed pages. The library can contain whole films, selected slides, taped TV materials edited and coded. The resources potentially available are limited only by ones' own imagination. Editing, coding for retreival with minimum access time and maximum fidelity are important technical problems for which the A-V specialist could assume responsibility. This means knowledge of computers information storage and retreival procedures and systems represent potentially important areas of course content. With TV, it is possible to control displays electronically and to select from a rich library of materials.

What is the learning cycle?

The learning cycle differentiates P.I. from the mass media. With P.I. the student controls the system and it adapts to his needs in varying degrees. With all other media the student adapts to the system. He has to follow the dialogue and illustrative sequence at the pace it sets for him. With PI, on the other hand, the student starts the learning cycle which consists of a fixed set of events that are repeated over and over again in the cadence of the student. He sets the pace and his response determines what happens next.

The learning cycle consists of these steps. First, the student is stimulated (e.g., sees, hears, or both sees and hears the display). Second, he responds to the display in his own time and in a critical way. He may do this overtly or covertly. Third, his response changes the stimulation in a significant way -- he finds out whether or not his response was correct and he sees something else. If the system is highly adaptive, then it can react differentially. For example, each wrong response may result in a different display, or a correct response which is made more slowly (or rapidly) than the average also may result in a different display. In short, the cycle is present in all PI but not in any of the conventional mass media and when it is used it permits branching according to a wide variety of rules. The learning cycle is the heart of PI. But the heart requires blood to flow through it and this is the content or program. The rules that control the heart (the step sequence of the cycle) are fixed. Those that determine what blood (program step) flows through the system at any point in time are not fixed. In fact, they are the objects of research attention now. This is research on principles of programing.

The A-V specialist can contribute to the progress of the cutting edge of research on principles of programing through the adaptation and development of techniques and methods to the problem of differential selection of information. The person programing often needs to know how to get access to material through student response. The problems that bind are the access time and the range of possibilities (e.g., slides, motion sequences, taped sound sequences). To contribute in this way, the AV specialist will need some survey courses in electrical engineering technology, particularly relating to computers and information storage and retreival systems. Human engineering courses would also be useful in acquainting him with information relating to the interface.

What is the significance of context?

In addition to a general knowledge of PI as a total systems concept (including the learning cycle and programing), it is necessary for the A-V educational specialist to relate his work to the context of education rather than to such other competing contexts as entertainment or documentation.

PI, unlike other media, was developed in the context of education and to serve the specific purposes of teaching. In this way it differs from films, tapes, and TV, all of which were developed for other purposes (e.g., entertainment) and later adapted to the needs of education.

The conflict that can occur when using media which are adapted from another context is that procedures and techniques are used without considering their implications for the new context. Music on films, color, dramatic sequences, all can be related to a learning objective but sometimes interfere with it. This is a potential danger which is greater with TV, films and tapes than with PI.

Another aspect of the context problem is that of using techniques and examples which fit into the environment (context) in which they are used. Education is not only a process, it is an institution with customs, standards and values. These need to be recognized by the A-V educational specialist. Furthermore, there are regional differences relating to historical and political factors as well as to philosophies of education.

In addition there are national differences and A-V specialists are likely to work on materials for foreign as well as domestic use.

Courses in Education should be developed for the A-V specialist so as to provide him with information about the different contexts in which he will work and their implications for what he does. Here the need is to teach him the concepts of the various educational theories and the history of education. Both should be presented from the point of view of the unique or special set of values of the different cultures.

Even with PI the context is likely to determine its acceptance, let alone its success, in many ways. Machines can not be used in all cultures or locations by all students. The device must be human engineered for use by particular groups of students. PI is likely to be used by many different students and in more different contexts than are films or TV, for example. PI can be used anywhere. It is a "broad spectrum" concept since it can take either the form of a book or of a computer-based facility. Power supply and screens for example, are not critical to its use. It can be used outdoors or indoors. It does not require specialists to operate or maintain it, although particular forms of PI which use hardware may have limiting requirements. It can fit a small budget and be effective, or whenever a large budget is available, it can be elaborate and possibly even more efficient.

Questions of context relate to questions of economics and requirements for supportive resources (e.g., utilities -- power supply -- technical personnel). Courses in the A-V curriculum should deal with these problems as well as those relating to the philosophical and cultural factors in the context within which it is likely to be used. To get at these kinds of information, the curriculum should contain a course, possibly a survey type, dealing with economics, political science, educational philosophy, sociology, and anthropology.

What might the curriculum be like?

An attempt will be made to describe the curriculum in general but not in detail. For instance, no effort will be made to describe the courses as a sequence. The curriculum notion presented here is to be considered independent of the sequence in which the courses would be covered.

The major areas of the curriculum that seem indicated are: (a) Communications; (b) Psychology; (c) Education; and (d) Research and scientific method.

Communications courses should cover the theory and technology of communication. Included would be courses in TV and films -- directing, cinematography, staging and lighting, and educational uses (research results heavily weighted). Also to be included would be the usual courses in radio and audio systems including directing laboratory work on recording and editing.

Two departures from tradition suggest themselves for consideration. One is that courses directed at the A-V educational specialist be developed by separating existing content as related to news, advertising, and dramatic presentations into a course of its own. The new course that would result would deal with educational applications and results of research concerned with an educational use of the media. A single course might be considered if sufficient content is not available for separate courses relating to (a) audio-visual media (TV and film) and (b) audio and other media (e.g., tactile)

The second innovation would be to include: (a) a course covering educational and research uses of devices for producing PI materials, e.g., office equipment such as copy devices, mimeograph, multilith; (b) a course dealing with data processing systems (e.g., computers and associated equipment) and with basic concepts of programing a computer for data processing; and (c) a course dealing with the communication of data for research purposes both to facilitate processing and to present results of studies. Also included in this curriculum would be a course in language including analysis of printed language (readability procedures), basic concepts of modern linguistics (auditory analysis), machine and computer languages (synthetic language systems), plus symbolic logic.

The Psychology courses should include: human learning, perception, human engineering, and motivation. A graduate course might be developed as a seminar on the psychology of learning as related to programed instruction. The analysis of behavior and task classification could represent another graduate seminar.

The Education courses should focus on context, and research methodology. History and philosophy of education, sociology of education, and comparative education would all relate to context. Methods courses in measurement, statistics and data processing, both theory and practice, should be included at different levels. The measurement of achievement -- verbal performance testing -- would be one course. The measurement of attitudes would be another. Data processing courses should include card punch systems, tape systems, and fundamentals of computer programing.

The courses in scientific method and research design would typically be advanced courses and could be taught in education or psychology if not taught in the communications department. The student should do a master's level research project and a doctoral level project wherever possible so as to advance the state of the art.

Part II - H

THE PLACE OF LEARNING THEORY IN THE GRADUATE TRAINING OF AUDIOVISUAL COMMUNICATION SPECIALISTS

Kenneth Norberg
Sacramento State College

In a provocative article exploring the "Prospects for a Discipline of Education," Marc Belth agrues the case for a discipline that would stand upon its own feet. He denies the view that "--education is nothing more than a name for a judicious collection of the findings of other sciences," and seeks to outline a set of basic concerns which require and deserve the status of a distinct scientific enterprise. "If education is to begin its scientific career, it can do no better than by developing educational psychologists rather than to invite psychologists to enter into problems of the educators. So with educational sociologists, political analysts, and technologists (1)."

Just what Belth means by a "technologist" is not specified, but the general import of his message is clear, and pertinent to the problem of designing a program of training for the audiovisual communication specialist. He is saying that the task of education is centered upon a set of fundamental human problems of sufficient depth and complexity to require the resources of a scientific discipline of its own--related to other disciplines, but having its own identity and its own internal fields of specialization.

The following proposal regarding the place of learning theory in the training of audiovisual communication specialists* is based upon the primary assumption that education comprises (in potential at least) a field of scientific inquiry in its own right. This is not to say that there is, at present, a full-fledged science of education, nor than educators are not dependent, to a large extent, upon related scientific disciplines. The point is rather that educators, as a professional group, must assume responsibility for the scientific study and management of their peculiar occupational functions. If they fail to do this, they relinquish their proprietary rights as a profession.

Without proper autonomy an occupational group is something less than a profession. Myron Lieberman discusses this point at some length in his book, EDUCATION AS A PROFESSION (8). He points out that all professions are subject to occasional attacks upon their autonomy by lay groups, but that education is especially prone to this form of encroachment. He also notes that the degree of autonomy of a professional group may be subject to more or less constant change. "Professional autonomy may expand in some directions while simultaneously contracting in others, but it rarely remains static for very long (8:89)."

Here, there is food for thought. The current wave of criticisms of education and the "educationists" threatens not only the autonomy of classroom teachers, and those who train them, but all who work within the framework of the profession,

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* Hereafter to be referred to as AVC specialists.

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including the AVC specialists. To some extent, the general hue and cry about excessive emphasis on methods courses in the training of teachers can be, and has been, construed as also a challenge to the importance of audiovisual techniques.

Finn has documented the violent criticisms coming from certain academic and literary sources (5). These attacks have a logic of their own, related to the cultural breach between the literary and scientific communities (says Finn), but of course they join neatly with the general reaction against "too much method and too little content." Such criticisms have come, mostly, from academic or lay groups not directly concerned with the development of a science of teaching.

Recently, the professional authority (and thus the autonomy) of the AVC specialist has also been challenged, by implication, from an entirely different kind of source. In 1961, B. F. Skinner noted that education has been resistant to scientific analysis and technical change--that the typical classroom had not changed, basically, in a century. Then, he went on to say that "--the use of films and television does not constitute a new method; it is merely a way to amplify and extend old methods, together with their shortcomings (16:91)." In other words, Skinner denied that film and television have anything new or really different to offer education, from a psychological standpoint. There was, however, he asserted, something new and psychologically significant in the case of programed instruction.

> "Fortunately, recent advances in the experimental analysis of behavior suggest that for the first time we can develop a true technology of education. This technology, following the practice of the experimental laboratory, will use instrumentation to equip students with large repertories of verbal and nonverbal behavior. Even more important, the instrumentation will be able to nurture enthusiasm for continued study. The instruments that will help our schools to accomplish all this are called teaching machines (16:91-2)."

Although these comments should not be interpreted as a direct or intentional attack upon the professional competence of the AVC specialist, the implied message is clear and significant. What he is saying is that the first significant step toward a modern technology of education was introduced by psychologists working outside the field of education, and that it came not from educational psychology nor from the educational technologists, but directly from the experimental laboratory.

Of course, Skinner's somewhat audacious statement overlooks a long history of experimental inquiry and the gradual development of a scholarly tradition in the audiovisual field, accompanied by the growth of significant programs of graduate instruction in some of the larger centers of higher learning. Nevertheless, here is at least a grain of truth that needs to be pondered.

Programed instruction has had a very sudden and startling impact upon education, although its total ultimate effect is still unknown. The audiovisual field is widely and actively involved in this development, as it should be. But what, exactly, is the role of the AVC specialist? Is he a custodian of machines and a librarian of programs, or is he something more? And if more, how much more? Similar questions can be raised with regard to the other media. Television, for instance, also poses the problem in a rather dramatic way. It isn't just the question of whether TV is AV, but rather what is involved in the management of a medium as a factor in the instructional process. If this profession has to do with the design of instructional messages, as suggested in the special issue of AV COMMUNICATION REVIEW which recently offered a definition of the audiovisual field (3), what does that mean?

The answers must come from the education profession, and the AVC field must assume leadership in developing them. As long as many educators and lay groups continue to think that the AVC function is merely to provide specific technical solutions to implement or to amplify existing methodologies already at work in the classroom--as long as many AVC specialists are actually limited to this function--it will be difficult to assume a truly professional and creative role.

Current changes now going on in education suggest that AVC specialists must assume a definite role of active professional leadership in the design and implementation of new instructional programs. As the number, size and complexity of instructional problems increase, their solutions tend to become more comprehensive and more systematic. Finn said it some time ago. Technology enters in, at last, at the level of broad instructional planning. In the contemporary school we can no longer deal with instructional problems on a piece-meal basis, nor without altering existing conceptions of the teaching task in its relations to media-instrumentation. Hoban, Carpenter (15), and others have outlined the concept of a "systems" approach to education which would attempt not only to amplify the teacher, but to conserve time and energy for critical human tasks by systematic matching of instructional functions with diverse and inter-related human and technical capabilities.

AVC specialists have a choice to make. If this is to be a profession they must assume a role of professional authority and autonomy with respect to the planning and implementation of instructional systems and techniques which are to make optimum use of modern technology. This is a professional task requiring intricate collaboration and communication with other professionals in education, psychology, and other related fields. If the AVC specialist fails in this task, or chooses not to undertake the full measure of his responsibility this will deter the realization of a truly modern technology of education and will certainly retard, or even abort, the professionalization of the audiovisual field.

What then, must be done for the professional training of AVC specialists, with particular regard to learning theory? If the AVC specialist is to meet his professional challenge, he must know a good deal about learning. He must be able to read the literature, understand and interpret reported research findings, communicate what he knows, take part in the planning and conduct of research, appraise conflicting points of view, and keep up with an expanding and changing field. Harcleroad, VanderMeer, and others pointed out the general need for learning theory in the training of AVC specialists in 1960 (7). The importance of learning theory and its pervasive implications in the AV field was further underlined by the publication of special issues of the AV Communication Review on learning theory (9) and perception theory (14) in 1961 and 1962. Learning theory is required, but how much? Of what sort? And why is it so important after all? To deal with these questions we must examine the present state of a still immature science.

The State of Learning Theory

In order to answer the question, "What, or how much, psychological knowledge is of worth to the AVC specialist?" we must first inquire into the state of this particular field of inquiry. There is, of course, nothing approaching what might be called a complete science of learning, and the state of learning theory is rather fragmentary and torn by sharply divergent points of view. The lack of a well developed and unified science of learning is freely acknowledged by Spence (17), Melton (10), Hilgard (15), and many others. Spence has pointed out that we have only "low level" laws for a limited number of types of learning (17). Hilgard points out that, "there is not yet a consensus on the so-called laws of learning (15:22). Estes, preparing the first summary of learning theory for the (1962) ANNUAL REVIEW OF PSYCHOLOGY, begins with a statement that the area is "in a formative stage and still undergoing too rapid transition to be portrayed without distortion in a cross-sectional review (4:107)."

To make matters even worse, there is a wide separation between the "pure" experimental psychologists working in the total field of behavior and the educational and applied psychologists who are interested in the actual process of instruction in the classroom.

How can "pure" science and applied science get together? Especially when the field is still in a fragmentary and formative stage, with deep cleavages in the underlying theoretical structure? The difficulties are severe and apparent, but not everyone looks at the problem the same way. Spence, for instance, is frankly preoccupied with the task of developing the basic science. He feels that, "because of the pressing demands of society, applied research has been emphasized at the expense of basic research (17:87)." His remarks include the statement that the time is ripe for a combined research effort, but it appears that his personal enthusiasm for such an effort is not great because of his deep commitment to the importance of the experimental laboratory approach at this stage of the game.

Melton, in his discussion of "The Science of Learning and the Technology of Educational Methods," shows a high degree of concern for a much closer coordination of basic and applied research, and seems to feel that these can proceed fruitfully in a parallel relationship, at the same time. He compares the relationship of education and psychology to that of engineering and the physical sciences. The joining of education and psychology constitutes a two-way scientific enterprise. "--Education is not just the straightforward application of the science of learning, any more than engineering is just a straightforward application of the physical sciences. Just as physicists discovered things that made the creation of television possible, but engineers created television, so likewise psychologists have discovered many things about the learning process, but educational technologists must design curricula and teaching machines that exploit that knowledge (10:98)." Glaser expresses a similar view in his discussion of "Learning and Instructional Technology," in the special issue of AV Communication Review on LEARNING THEORY AND AV UTILIZATION. "The ways in which basic science proceeds do not assure systematic and fruitful interplay between basic knowledge, applied research, and subsequent technology--somebody must work at it (9:43)." Glaser adds the thought-provoking comment that basic science emphasizes how little we really know (how much more we need to find out), whereas applied science and technology "concentrate on how much we do know and how this knowledge can be incorporated in practical procedures (9:43)." This latter observation leads directly to the next question--

Thus far we have tried to join pure science and instructional technology in a marriage of necessity, but how can we be confident that the marriage will bear fruit if one or both partners prove to be sterile? Glaser's statement, given just above, reveals an optimistic tone, but if we take seriously the protestations of psychologists as to how little they know, and how wrong other psychologists can be, should we be quite so optimistic? The evidence is both pro and con.

On the one hand there are a number of findings, principles, "low level" laws, that seem to have fairly wide acceptance. Hilgard, for instance, listed a "residue of useful principles that can be kept as reminders when practical applications of learning are under consideration (15:22-4)." N. E. Miller outlined a set of principles applicable to film learning, following the terms of his particular theoretical approach (12). The special issue of AV COMMUNICATION REVIEW on learning theory (9) contains a collection of articles by psychologists discussing the audiovisual implications of a rather wide range of findings, viewed from various theoretical perspectives. The field has its own psychologists, including Hoban, Carpenter, Lumsdaine, and others who have become involved in educational technology more recently.

So, of course, there is some sort of working psychology of audiovisual education --an eclectic accumulation of findings, principles, and ideas drawn from a wide diversity of sources and theoretical points of view. But what of theory, itself? This is where "the going gets tough."

By and large, the work of the experimental psychologists has been dominated by a "stimulus-response" type of theory in the tradition of classical and instrumental conditioning. A modern trend toward the use of mathematical models of learning, as shown in the work of Estes and others, is within the classical S-R framework. S-R theory has its internal theoretical issues, such as various ways of accounting for the forming of S-R bonds, or associations, and the recent issue concerning the "incremental" vs the "all-or-none" interpretations of associative strength of S-R connections, but these differences are "within the family." Despite disclaimers to the effect that there is no unified theory of learning, it is still apparent that classical S-R theory covers the work of the experimental psychologists like a huge umbrella.

The reluctance of educators, including many educational psychologists, to accept a bald S-R interpretation of human learning is well known. What is not so widely recognized, perhaps, is that general psychologists outside the field of education, and including some working in the mainstream of the S-R tradition, are also actively seeking formulations better suited to account for broader segments of human behavior more nearly characteristic of the concerns of cognitive theory and other more inclusive perspectives in psychology. What happens between the stimulus and the response is the great, dark continent of learning research, and many are loth to venture there, but not all. For instance, Mowrer's book on LEARNING THEORY AND SYMBOLIC PROCESSES (13) is a notable attempt to build an elaborated S-R theory incorporating concepts from traditional cognitive psychology. Galanter and George Miller (6) have suggested that a theory of learning substituting the concept of a "feedback loop" for the prevalent "reflex arc" which is basic to contemporary S-R theory, would constitute a more suitable approach to the complexities of human behavior and learning. In his recent summary of learning theory, Estes (4) concedes the importance of trying to deal with larger segments of behavior, as proposed, for instance, in the book by Miller, Galanter and Pribram (11) on human plans, purposes and strategies, but he concludes that the interesting question is not whether, but how, to approach this complex problem of investigation. Galanter and Miller (6) also find that this is indeed a problem, but insist that it must be faced.

At a floor level of professional competence, it is necessary for the AVC specialist to know that the theoretical problem exists, and to be able to trace its main implications with regard to decisions involved in his job of instructional "engineering." He must know the strengths and limitations of the psychological assumptions upon which his work is based, and be able to discuss these with professional colleagues and laymen, at some level of sophistication.

Over and above the need to communicate effectively with colleagues and others, the audiovisual field has its own unique perspective and talents to contribute to the task of theory development. It is apparent that there are elements in modern communication theory, and also in perception theory, that are relevant to the problems of learning, and the reverse is also true. AVC specialists with well defined research and theoretical interests have already developed a substantial body of theoretical literature in the fields of communication and instructional technology, but of course this work has only begun. A broad understanding of learning theory is a fundamental requirement for the continuation of this critical task.

A Proposed Curriculum

The following proposal is for the doctoral level training of broadly oriented AVC specialists (or what James Brown calls AVC "generalists"), who are to be qualified to assume positions of leadership. This category would include those who are, or will become, involved in graduate level teaching and research, as well as those who are to hold administrative positions of wide responsibility at the policy-making level. The training of specialists for more narrowly defined responsibilities will be discussed briefly in Appendix B.

As I see it, there is no way to determine objectively, with a high degree of confidence, exactly what content or what number of courses in learning theory should be included in the doctoral level program of training leading to this field of professional work. The following judgments, therefore, frankly, are based partly on intuition and partly on my subjective evaluation of current practice.

The doctoral program of training for the AVC "generalist" should include at least five to six semester hours or units of work in advanced educational psychology and learning theory. This may suffice if we can assume a prior firm foundation in general and educational psychology, and if we can also assume coordinate graduate level work in communication theory, perception theory and research methodology. In other words, any prescription of graduate level work in learning theory is relatively meaningless except as viewed in relationship to a total configuration of courses in closely related fields. Moreover, there should be some provision to develop an overall philosophical perspective. Without this broad view, a "depth" approach to learning theory may only result in the graduate student digging himself more and more deeply into some endless hole.

My specific suggestion would be that graduate course work in learning and communication should terminate in a "capstone" seminar which would undertake the very formidable task of trying to bring together some of the basic concepts and problems in the fields of learning, perception, and communication, with regard to the long-range task of conceptualizing an instructional technology. Ideally, such a seminar would involve at least four instructors: one representing the field of learning theory and research, one representing communication theory, one speaking for perception theory, and one approaching the total inquiry from a philosophical perspective. In some cases, a communications or learning person with adequate background might be qualified to assume the philosophical role, but ordinarily I would think a better job could be done by a separate person. Specialists in other fields could be brought in from time to time.

Some "pure" scientists may be appalled, or even repelled, by the idea of trying to bring together into some kind of unifying perspective a complex of different fields, each lacking a unified and mature theoretical structure of its own. But these fields are closely related, and some of their "internal" problems may not be so internal, after all. Mowrer's attempt to elaborate a learning theory involving symbolic behavior is just one of many cases in point (13). In any event, such a "capstone" seminar is only an attempt to provide the conceptual tools of inquiry toward a theoretical base for the job that has to be done anyhow. The fact that educational technology requires an inter-disciplinary theory, among disciplines that are not yet fully formed, is sobering, but ought not to frighten us out of our wits. Hilgard (15) has pointed out that technology doesn't always have to wait for pure science, but may go ahead of it. Also, he advises that the advance of knowledge through the interplay of pure science and technology is a two-way process. If this is true, I propose that we can continue to develop a theory of audiovisual communication, or instructional technology, at the same time that its source disciplines are developing their own. In fact, this is what must be done if audiovisual communication is to become a vital and significant field of professional specialization.

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APPENDIX A

The Case Against Learning Theory

Negative case #1: Is it really necessary for the AVC "generalist" to have a thorough understanding of learning theory--to make a "big thing" of it? A contrary case might be made on the grounds that the AVC specialist has many highly complex technical and administrative problems to deal with, and that therefore he ought to concentrate on these and leave to psychological consultants, researchers and other educational specialists the problems that involve an understanding of learning theory in depth.

As I see it, this is a fallacious line of argument which can only prolong the somewhat questionable status of the audiovisual profession, or lead to its deterioration. The fact of the matter is simply that the AVC specialist must have a coordinate role with other specialists who assume authority and leadership in theoretical development, policy-making, and high-level instructional planning. To do this he must be conversant with the theory and developing science of learning, as far as it goes.

Negative case #2: Why attempt to gain comprehension of a vast, sprawling field that is so chaotic and lacking in unified perspective that no one can understand it, anyway? If there is no unified science of learning, as the psychologists themselves admit, doesn't the designer of instruction really have to fall back on common sense when the "chips are down?" The answer to this line of argument, as I see it, is that the lack of a fully developed scientific base of operations in education doesn't remove the need for scientific orientation. To give up and accept "common sense" as a substitute for scientific method is essentially a defeatist attitude which tends to increase the confusion and to invite reactionary counter-pressures of uninformed critics just at the time when a professional group needs to assert its proper authority.

If the AVC specialist could work within a highly articulated and more settled framework of theory (including learning theory) his would be a much easier task. In part, it is the very lack of a fully developed and unified theory of learning that forces him to probe this area in some depth. In order to draw properly and judiciously upon the young and somewhat sprawling science of learning, the educational "engineer" (2) must be able to take a large view of the field. Also, he must be able to meet the psychologists half way.

APPENDIX B

Learning Theory in the Master's Program

A wide range of gradations and areas of specialization within the field of audiovisual communication suggests that not everyone in the field requires the same training nor the same amount of training. Some programs will terminate at the Master's level and will lead to positions of relatively limited responsibility not requiring the rather thorough study of learning theory involved in the full-scale doctoral program described in the main body of this paper. A similar stipulation would hold in the case of some persons preparing for specialized work of a technical nature. However, there must be some constants and some variables. Also, there should be some continuity or progression from one level to another.

It is assumed that Master's level students whose current professional plans and interests may be of a more limited or rather highly technical sort, must still be able to function effectively in a professional framework, and as representatives of the audiovisual professional group, at whatever level of responsibility. Also, some will go on to more training, and eventually to positions of broader responsibility. Hence, it is proposed that the Master's program, with some possible exceptions, should include one course in advanced educational psychology, for 2 or 3 units of credit. This would be a first step toward the 5-6 units required in the doctoral program.

STATUS STUDY OF PROFESSIONAL EDUCATION PROGRAMS FOR AUDIO-VISUAL OR EDUCATIONAL MEDIA SPECIALISTS

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This is the report of a study in progress designed to establish the status of programs in colleges and universities in the United States for the education of audio-visual or educational media specialists. The study involved the collecting of descriptions of existing programs and the making of an analysis thereof.

PROCEDURES

The following procedures were used in the conduct of this study.

A. All colleges and universities in the United States accredited by their regional accrediting agencies were identified from the listing in Accredited Institutions of High Education published by the National Committee of Regional Accrediting Agencies of the United States on September 1, 1962.

B. Letters were sent to individuals in the various areas of the United States known to be active in Department of Audio-Visual Instruction of the National Education Association and state audio-visual association affairs. These people were identified by members of the Alameda County State College staff with the assistance of Department of Audio-Visual Instruction personnel. The letter asked that they identify individuals who are in charge of programs at colleges and universities in their geographical areas. They were also asked to indicate the institutions which were known to have no offerings. A list of the specific colleges and universities was enclosed.

C. A questionnaire was developed for use in collecting information concerning programs existing to prepare audio-visual or educational media specialists. The complete questionnaire is found in Appendix A. An effort was made to obtain specific information in the following areas:

1. Under whose jurisdiction in the college or university is the graduate program for the education of audio-visual or educational media specialists?

2. At the master's degree level, how is this program of courses classified -- major, minor, or other?

3. At the post-master's degree level, how is the program classified?

4. At the undergraduate level, how is the program of courses classified -- major, minor, or other?

5. Are these programs inter-divisional?

6. Which courses are offered, by number and title, in the following areas? Which department offers them and are they available to undergraduate and/or graduate students?

   a. Resources and their utilization.

b. Preparation of materials, such as graphic and projected.

c. Administration of audio-visual resources in the education program.

d. Communications.

7. What is the role of personnel of the campus-wide audio-visual services organization, if any, in the preparation of educational media specialists?

   a. Under whose immediate jurisdiction is the organization for campus-wide audio-visual services?

   b. Do staff members of the service organization participate in the program for the education of audio-visual or educational media specialists?

   c. Are materials distributed by the service organization available to student in the program?

   d. Are the facilities of the service organization used in the program?

8. What work experiences are available to graduate students participating in the program?

   a. Job titles used

   b. Nature of the work

   c. Approximate wages

9. What are the strengths or areas of emphasis in the program?

10. What developments are foreseen in the program within the next five years.

The basic form of this questionnaire was adapted from one prepared by L. C. Larson and Edwin G. Cohen in 1955 for the Professional Education Committee of the Department of Audio-Visual Instruction, National Education Association. The results were published by this organization in November, 1955, under the title, Directory of Graduate Programs for the Professional Education of Audio-Visual Supervisors, Directors, and Building Coordinators.

D. A questionnaire with a cover letter, which is found in Appendix B, was sent to the people identified in B above.

E. The deadline date for return of the questionnaire was February 20, 1963. A follow-up letter, found in Appendix C, and another questionnaire was sent to each institution which had not responded by that date.

F. The information on the returned questionnaires was tabulated and the results analyzed.

RETURN OF THE QUESTIONNAIRE

Questionnaires were sent to the institutions identified as having or possibly having programs for audio-visual or educational media specialists. Responses were received fro

239 (76%) institutions in 44 states and the District of Columbia. Of those responding, 75 reported that they have no program. A tabulation of the number of institutions reporting by state is found in Table I. The responses are classifed according to the number of areas, as in item five in the questionnaire, in which courses are offered; that is utilization of resources, preparation of materials, administration of resources, research in audio-visual education, and communications.

RESULTS OF THE QUESTIONNAIRE

Results from the questionnaire are summarized in Table II. Institutions which offer courses in only one of the five areas listed in item five of the questionnaire are chiefly limited to serving undergraduates. All except one of these institutions offer a course or courses in the area of utilization and the course or courses are generally elective except in states which have such a requirement for the certification of teachers. These courses are primarily for the preparation of teachers.

Seventeen (77%) of the twenty-two institutions offering courses in two areas include utilization and preparation. Of the institutions offering courses in three areas, twenty-four (66%) have in common the areas of utilization, preparation, and administration. Nineteen (76%) of the twenty-five institutions offering courses in four of the areas include utilization, preparation, administration, research. Thirty institutions reported offerings in all five areas.

Most programs for the preparation of educational media specialists are under the jurisdiction of the College of Education; sometimes it is shared with the graduate school and the Department of Audio-visual education. Some returns indicated that the Department of audio-visual education is under the College of Education. Thirteen institutions reported that their program is under the jurisdiction of the Library school, two are under the School of Communications, three are under the Extension Division, and eight report other arrangements.

Masters degree majors for audio-visual or educational media specialists are available from thirty-six institutions and minors from sixteen; some of these institutions offer both the major and minor. Forty-seven colleges and universities have other arrangements, the most common being that of a concentration in audio-visual with a major in education. Fifty-seven (65%) such programs are inter-divisional; thirty are not.

Twenty-one institutions offer majors in post-masters degree programs, twelve offer minors, and twenty-five have other arrangements, usually a concentration within an education major. Twenty-nine (64%) programs are reported as being inter-divisional; sixteen are not.

Undergraduate majors for educational media specialists are available from three institutions, minors from twenty-four. One hundred one responses reported course offerings only on the undergraduate level. Thirty-nine (47%) have offerings which are inter-divisional; forty-four are not.

Of those answering the question, one hundred thirty-six (85%) reported the existence of an organization for campus-wide audio-visual services. Most are responsible directly to the dean of instruction or to the school of education. One report indicated that the service organization is responsible to the Building and Grounds Department.

TABLE I

QUESTIONNAIRE BY STATE

Number of institutions reporting according to the number of areas in which courses are offered (as in item five of the questionnaire.)

State	1 area	2 areas	3 areas	4 areas	5 areas	Total
Alabama			3			3
Alaska	No questionnaire sent					
Arizona					2	2
Arkansas						0
California	13	1	4	2	4	24
Colorado	2			2	1	5
Connecticut	1	1			2	4
Delaware						0
District of Columbia	1					1
Florida	1	2	2		1	6
Georgia		1				1
Hawaii					1	1
Idaho						0
Illinois			3		1	4
Indiana	1			1	3	5
Iowa	1				1	2
Kansas						0
Kentucky		2		1		3
Louisiana						0
Maine			1			1
Maryland	1					1
Massachusetts		1		1	1	3
Michigan			3		2	5

TABLE I - Continued

State	1 area	2 areas	3 areas	4 areas	5 areas	Total
Minnesota	1	1	2	2	1	7
Mississippi	2		1	1		4
Missouri	1		2		1	4
Montana	3	2				5
Nebraska		1				1
Nevada		1				1
New Hampshire	1		1			2
New Jersey						0
New Mexico		1	1			2
New York	3		2	1	5	11
North Carolina	3	2	1	2		8
North Dakota		1				1
Ohio				3		3
Oklahoma				1		1
Oregon	2	1	2			5
Pennsylvania					1	1
Rhode Island			1			1
South Carolina	1					1
South Dakota		1	1			2
Tennessee				1	1	2
Texas	12	1		3	1	17
Utah	2		2			4
Vermont	2					2
Virginia			1			1
Washington			2	1		3
West Virginia	5	1			2	8
Wisconsin	1		1	2		4
Wyoming	1					1
	61	21	36	25	31	174

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Ninety-two (73%) of one hundred twenty-six indicate that campus-service personnel participate in the specialist program. Campus-service materials are available to student in the program in one hundred nine (90%) of the hundred twenty-one institutions. Service facilities are available in one hundred twelve (93%) and not available in nine.

Courses dealing with the utlization of resources are available in one hundred sixty-three (99%) reporting institutions, preparation courses in one hundred four (63%), administration courses in eighty (48%), research courses in fifty-five (33%), and communications courses are available in fifty-one (31%).

FUTURE DEVELOPMENTS

Institutions offering courses in four areas report intentions within the next five years of increasing course offerings in television, programed instruction, preparation of materials, and research, in that order. Two mentioned the possibility of offering the masters degree in audio-visual instruction or instructional materials. One institution reported intentions of developing a sixth year program for state certification of audio-visual directors.

Three colleges and universities mentioned the addition of internship programs in their graduate programs. Six expect to have expanded audio-visual service centers and production facilities.

The institutions offering courses in all five of the designated areas plan to increas their course offerings with eight indicating that various aspects of research will be emphasized. Programed instruction will receive special emphasis by seven institutions, and the preparation of materials will be stressed by the same number. This includes film production, still photography, graphics and television production. One college plans to place less emphasis on production in order to allow greater work in television and programed instruction.

Seven institutions indicate that they will expand their offerings in television utilization and production, including closed circuit. In some cases this will be possib due to increased facilities. One plans expansion in radio.

The strengthening of courses in communications and communications theory are the plans of three respondents to the questionnaire. One plans to develop an additional administration course; one hopes to have a course in language laboratory operation; and one will develop more course work in the evaluation of instructional materials.

One university reports that it now has one course with a primary emphasis in the area of educational technology. It is expecting an increasing emphasis on cybernation with, perhaps, an inclusion of some cybernation content in other courses as well as the development of additional courses and projects in this area.

One respondent is looking forward to developing an integrated program in audio-visual communications, library science, and radio and television; another plans to emphasize the training of administrators. Still another reports a desire for more complete empath of audio-visual courses with the curriculum. One hopes for closer cooperation among the several divisions of the college interested in problems concerning effective communications. A closer relation between the strictly audio-visual courses and the courses directly concerned with methods of instruction is the goal of one university.

Occasional mention was made that there would be continued effort to prepare people fo new media jobs in public schools. There is a need expressed by two respondents that educational media specialists, even though thoroughly trained in one of the media, will need extreme breadth of training in order to fulfill their function. This is a plea for development of the media generalist.

The projections listed above will in several instances be stimulated by the availabili of new facilities. Some of those specifically mentioned were facilities for audio-visual services, more research facilities, learning resource centers, television production facilities, and an instructional systems development facility.

Specific new programs which are anticipated include a masters generalist degree with emphasis on a broad instructional technology background, a six year specialist degree, a graduate program emphasizing curricular utilization of television, a doctoral program in educational communications, and a doctoral program for the professional education of an assistant superintendent in charge of educational media. One university plans to develop a doctoral program in communications which will emphasize liberal education as well as communications theory. Some of these programs plan to involve more internships.

One university currently offers majors in the Cinema Department, the Telecommunications Department, Communications Division, and the Department of Instructional Technology Many of the offerings are inter-departmental.

Under a Title VII grant from the United States Office of Education we are attempting to develop guidelines for professional education programs for audio-visual or educational media specialists. As part of this project we are concerned with the status of programs at colleges and universities.

At the same time we will update the 1955 issue of Directory of Graduate Programs for the Professional Education of Audio-Visual Supervisors, Directors, and Building Coordinators, which was prepared by L. C. Larson and Edwin G. Choen for the Professional Education Committee of DAVI.

We would like information concerning your program. Please assist us by filling in the attached questionnaire and returning it to us by February 20 in the enclosed envelope.

Please include courses in areas such as library, science, television, film production, educational technology, psychology, and communications only as directly related to the preparation of persons who will be responsible for making decisions as audio-visual or educational media specialists.

Thank you for your prompt help.

Sincerely yours,

Charles W. Worland
Division of Education
Alameda County State College

PLEASE COMPLETE AND RETURN IN THE ENCLOSED ENVELOPE BY FEBRUARY 20.

Institution: ______________________________

Address: ______________________________

1. Graduate programs for the education of audio-visual or educational media specialist are under the immediate jurisdiction of:

   Check (x) School of Education _____; Department of Audio-Visual Education _____; Extension Division _____; Graduate School _____; Library School _____; School of Communication _____; Other (Specify) ______________________________

   Remarks: ______________________________

   ____

2. At the master's degree level, how does your institution classify this program of graduate courses: Check (x) major _____; minor _____; other _____

   (Specify) ______________________________ Remarks: ______________________________

   ____

   Is the program inter-divisional: Check (x) Yes _____; No _____.

   (Specify) ______________________________

3. At the post-master's degree level, how does your institution classify this program of courses: Check (x) major _____; minor _____; other _____.

   (Specify) ______________________________ Name of degree or diploma ______________________________

   ______________________________ Remarks: ______________________________

   ____

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3. (Continued)

Is the program inter-divisional? Check (x) Yes______; No ______.

(Specify) ____

4. At the Undergraduate level, how does your institution classify this program of courses: Check (x) major ________; Minor ________; other ______.

(Specify)____

Remarks: ____

Is the program inter-divisional? Check (x) Yes ________; No. _________.

(Specify) ____

5. Please list by number and title your institution's offerings in the following areas and indicate the division or department with jurisdiction for the course.

a. Resources and their utilization

Jurisdiction	Number	Title	Available to U. Grad.	Grad.

b. Preparation of materials, such as graphic and projected

Jurisdiction	Number	Title	Available to U. Grad.	Grad.

c. Administration of AV resources in the educational program

Jurisdiction	Number	Title	Available to U. Grad.	Grad.

d. Research in audio-visual education

Jurisdiction	Number	Title	Available to U. Grad.	Grad.
______	______	______	______	______
______	______	______	______	______
______	______	______	______	______

e. Communications

Jurisdiction	Number	Title	Available to U. Grad.	Grad.
______	______	______	______	______
______	______	______	______	______
______	______	______	______	______

f. If you have course outlines for the courses listed above, we would appreciate your sending copies to us under separate cover.

6. Does your institution have an organization which provides campus-wide audio-visual services? Check (x) Yes _____; No _____.

7. (Please complete this item if the answer to question No. 6 is Yes.)

a. Audio-visual service organization is under the immediate jurisdiction of:

____

b. Staff members of the service organization participate in the program for the education of audio-visual or educational media specialists.

Yes _____; No _____.

c. Materials distributed by the service organization are available to students who are in this program.

Yes _____; No _____.

d. Facilities used by the service organization are used in this program.

Yes _____; No _____.

8. Please list any work experiences available to graduate students specializing in the preparation for the education of audio-visual or educational media specialist.

Job Title	Nature of Work	Approx. Wage
______	______	______
______	______	______

9. Person(s) to whom application for paid work experiences should be directed:

Name: ______________________________

Title: ______________________________

Name: ______________________________

Title: ______________________________

10. Are there any particular strengths or areas of emphasis in your programs?

11. Within the next five years, what developments do you foresee in your graduate program for the education of the audio-visual or educational media specialist? (Please use the back of this page if necessary. We want your comments and suggestions.)

Education for Librarianship Re New Media
Carolyn I. Whitenack

Education and Training of Film Production Specialists
John H. Moriarty

The Preparation of Educational Television Specialists
Warren F. Seibert

SUMMARY

Trends and Ideas Common to Librarianship, Television and Film Production Education

Underlying assumptions prevelant in librarianship, television, and film production for education of a media specialist are:

1. As knowledge and media have expanded, a growing number of fields of specialization have been created in each profession.

2. The shortage of fully trained professional personnel is the greatest problem of each profession.

3. The influence of the professional associations in up-grading the profession by meetings, conducting business, setting standards, research, and in-service education is very important.

4. The expert must have knowledge and understanding of education in general.

5. For acceptance in the educational community and for performance the specialist must be conversant with the procedures and factors of education, and may even need to be trained as a teacher and ideally should have had teaching experience.

6. Greater emphasis upon the underlying theory and principles of each discipline and less upon the details of application is suggested.

7. The expert must have a basic core of knowledge of media as well as highly skilled knowledges in his speciality. Substance and technique in his speciality are important.

8. There is need for a rather long period of education beyond secondary school - at least five years.

9. The problem of co-ordination of specializations in practice appears to pose great difficulty since each area is already having its own problems accommodating the specializations within its own discipline.

10. The high degree of specializations in each profession may lead to jurisdictional disputes within each group as well as among them and related groups.

11. Nevertheless, the role of the student and teacher, and the role of the specialist and materials will be more integrated and more important in the future which will be reflected in the service arrangements.

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12. Mutual respect and awareness among the specialists for the contributions of the other specializations is evident.

13. The increasing importance of scholarship and research as it relates to media and professionalization is apparent.

14. Each discipline expressed a desire for students with a high degree of intelligence, willingness to learn and continue learning, and a high sense of responsibility.

15. Strong leaders are the greatest influence for improving professionalization.

Part II - J

EDUCATION FOR LIBRARIANSHIP RE NEW MEDIA

Carolyn I. Whitenack
Purdue University

Introduction

Librarians since the time of the Assyrian librarian - King Ashurbanipal[1] have been concerned with mastering the complex skills necessary to collect, organize and make available the records of civilization and recorded information which are our literate heritage in order to bring them to bear in all possible ways on the intellectual problems of the time. From the beginning librarians have been concerned with the specific content of services to be rendered, to special kinds of clientele, and in certain types of situations. The services range from assistance to the individual user, whatever his interest, education, purposes and reading ability may be - to the most advanced inquiries and services for the theoretical research scientist. The clientele may be public or private; may be educated or uneducated; may be children, young people or adults, or all of these; may be a group, or an agency or an organization, or all of these. The type of situation may be in schools, colleges, universities, business, industry, government, and various public, private and/or special situations. Librarians may serve as generalists or may be classified as reference librarians, research librarians, catalog librarians, literature analysts, medical librarians, information specialists, documentalists, bibliographers, audio-visual librarians, instructional media specialists, instructional materials specialists or various other terms in current use.

Both substance and technique in librarianship have been developed and imparted to American librarians in library schools since 1887. This common core of knowledge includes systematically acquiring an understanding of the nature of knowledge, its records, its sources and use; the refined techniques of classification and cataloging, reference resources, bibliography, materials for children and young adults and the like; and the history, development and utilization of libraries and librarianship.

The Librarians' interest in technology and new media is identified by the many citations to these in Library Literature and by the research and scholarship in the new media frequently reported in their scholarly journals - The Library Quarterly, Library Trends, and Journal of Education for Librarianship. The popular periodical library press covers general problems and current news of the newer media. And the basic working tools of librarians - Library of Congress Catalog Cards, Winchell's Guide to Reference Books, Dewey Decimal Classification, ALA Catalog Rules, Sears List of Subject Headings - were developed and are used for book and non-book resources alike.

Recent national projects in the library world reinforce the librarians' interest in new media and technology. The American Library Association's exhibit, known as Library 21, at the 1962 Seattle World's Fair contained the latest forms of library service and design with emphasis on data processing, information storage and retrieval and advanced means of communicating information in graphic or recorded form as well as books and other printed material. The American Library Association's Library Technology Project tests new devices. A national workshop on new media with implications for library education, involving at least one representative from all the graduate library schools, the graduate program in teacher education and undergraduate program, will be held in Chicago in late May, 1963. The Audio-Visual Committee of ALA has sponsored numerous workshops and preconference before the ALA national conference in Chicago in 1963. Outstanding research in new media is represented by the Western Reserve study [2] "The Library of Tomorrow - Today: An Information Service of Educational Research Materials"; the Tauber-Lilley study[3] of an educational media research information service; the Rufsvold-Gus study[4] of bibliographic control of newer educational media, and the Lohrer study[5] of school libraries as instructional materials centers, with implications for training. In May, 1962, the USOE Library Services Branch held a conference on "The School Library as a Materials Center: Educational Needs..." which explored new requirements in professional education of school librarians. (In Publication).

The following brief outline of library education is written from the point of view of librarianship as it relates to the education of librarians regarding new media, and is primarily concerned with the philosophy, standards, and patterns of curriculum relating to educational media at the graduate and undergraduate levels.

Philosophy

The philosophy on which programs in general librarianship are built has been succintly stated by Dean Harlow of Rutgers Graduate School of Library Service: "There is a core of knowledge underlying all librarianship which provides an integrated approach to the utilization of knowledge. It is both scientific and humanistic in nature, is academic rather than vocational in approach, and it can be systematically extended through experimentation and research. Upon this rock specializations of many kinds can stand. Librarianship is interpretive in function, and is oriented to 'consumer' use; its organization and technique are subject to the principles of administration and management, and its complete circle embraces 'documentation' and the 'information sciences' and, I might add, 'instructional materials specialists'".[6]

Standards

There are thirty-four graduate library schools, three of which are in Canada, accredited by the American Library Association under a program of evaluation stated as *Standards for Accreditation* adopted by the ALA Council, July 13, 1951.[7] These standards set forth principles for evaluating organization and administration, financial status, faculty and staff, curriculum and degrees, admission requirements, quarters and equipment, and library facilities and services.

The basic program of professional education for librarianship encompasses a minimum of five years of study beyond the secondary school culminating in a master's degree. Assumptions[8] underlying library education today are that a strong liberal arts preparation is essential, that subject specialization is important, that a reading knowledge of at least one modern foreign language is desirable, that some ability in research methods is needed; that there is a valid series of core courses in which the principles and processes of librarianship generally can be transmitted and that these courses furnish a base for further specialization; that major responsibility for instruction in application of principles and processes of librarianship to specific situations rests primarily with the employer; and that admission "should be reserved for those applicants who give evidence of intellectual strength, personal balance and judgment, aptitude for library service, and promise of professional purpose and development." In addition, attention is being given to opportunities for a variety of programs in library education at the post-masters level. Programs for a doctoral degree are offered by the library schools of the University of California, University of Chicago, Columbia University, University of Illinois, University of Michigan, Rutgers University, the University of Southern California, and Western Reserve University.

The undergraduate standards,[9] also accepted by NCATE for the evaluation of undergraduate program in teacher-education institutions, are concerned with curriculum, organization, administration, faculty, admissions, facilities and budget.

The following principles are important: that a professional program in librarianship is based on a minimum of five years of study; that undergraduate programs shall be a total of not fewer than twelve and not more than eighteen semester hours which present a foundation for graduate library study and which prepare personnel for certain types of positions in various kinds of libraries; that there should be articulation between undergraduate programs and the graduate library schools in the area; and that there shall be at least one full-time professor for the program.

Curriculum

Although the terms 'educational media' and 'educational media specialist', not yet clearly defined, could apply respectively to various types of library resources and librarians at various levels of responsibility in various types of libraries, librarians are continuing to use the terms library and librarian, since they are rich in tradition, meaning and usage. The program of the school library seems to be more nearly related to the newly emerging term, than programs in other types of libraries since the school library's program of services and scope of materials includes educational media in serving the changing needs of the school. "The school library is a materials center, an instructional materials center, an instructional resource center or any of the equivalent terms now springing into existance... For the school library, through books, films, recordings, and other materials, goes behond the instructional program, and unfold for the many private guests of children and young people the imagination of mankind." [10]

A progress report of Professor Lohrer's study that finds that "With the exception of Florida, no state stands out as having a fully developed program of school libraries which accepts the philosophy of the national Standards for School Library Programs. However in other states, one finds that individual schools and school systems reflect the philosophy that the school library does serve as an instructional materials center." According to an inquiry made by Professor Gaver[12] to one hundred and forty-one graduates of Rutgers working in school libraries in the New Jersey area, excluding the city of Newark, sixty percent of the total group and seventy percent of those working in elementary school libraries say that they are either totally or partly responsible for the operation of a materials center.

And Dr. Stone has summarized our increased need for education in new media as: "I see the communications process as both the crucible and cement of education. Increasingly these processes will also provide linkage mechanisms and a framework. The role of the student, the role of the teacher, and the role of instructional materials serving both, will in the future be new, more integrated, and infinitely more important. Professional education for rendering media services to education should, therefore, reflect those service arrangements most likely to obtain in the future. These I believe will include a research component, a production component, an advisory and training component and a distributive unit built around a common professional objective."[13]

Education for school librarianship is based on the premise of five years of study for a professional school librarian. At the undergraduate level the program is based on a curriculum for teacher preparation; a baccalaurate degree including general education in the liberal arts with a major in a subject field; and a program of fifteen to twenty-four hours in library science and audio-visual services and cognate fields. The courses in school librarianship include selection, evaluation and use of printed and audio-visual materials for school collections; cataloging and classification; references sources organization, administration and practice in school libraries and/or materials centers. Some curricula add an area in the preparation of instructional materials.

A statement[14] prepared by a Joint Committee and approved by Department of Audiovisual Instruction, NEA, American Association of School Librarians and Association of Colleges and Research Libraries, ALA, identified the following competencies as essential to librarians and audio-visual specialists and others who have responsibility for instructional materials: Successful teaching experience; course work in educational administration and supervision, principles of learning, curriculum development, guidance and counselling and mass communication; and courses in the specialized area of analysis of instru tional materials, their nature and content, selection, evaluation and utilization of materials, production of appropriate instructional materials including laboratory and processes for the organization and maintenance.

Practically all graduate library schools provide for some integration of audio-visual topics and newly developing media, although the introduction of separate courses or curriculums in audio-visual resources until recently has been slow. However, progress has been made since Dr. Lieberman's[15] study of 1952 which reported that only seven of the sixty-one schools he surveyed offered separate audio-visual courses. In 1963 Professor Lohrer found that nineteen of the thirty-four accredited library schools provided a separate course or courses in audio-visual education and that seven others recommended or require audio-visual courses from other units of the college or university. Practically all schools provide an integrated approach in their materials and bibliography courses.

In graduate library schools some of the outstanding programs which emphasize new media are: Indiana, Illinois, Florida State University, University of Washington, Syracuse, Drexel, Western Michigan and Columbia in cooperation with Teachers College. The new Graduate School of Library Science at Pittsburgh will teach the school library as a materials center as well as other courses and research in media.

Some of the teacher-training institutions offering school librariahship at the masters level with programs of a materials concept are San Jose State, Appalachian State Teachers Kent State, Genoseo, Albany, Southern Illinois, Ball State Teachers, Queens, Indiana State, and Purdue at the dual level. In addition programs with a materials concept at the undergraduate level only are University of Tennessee and McNeese State Teachers.

Another facet of librarianship relating to new media is the field of documentation, informational retrieval, and information sciences. Degree programs[16] are offered by the following library schools: University of California, Drexel Institute, University of Illinois and Western Reserve. Existing programs in other colleges and universities are Georgia Tech, Lehigh, UCLA, Harvard, MIT, University of Michigan, University of Pennsylvania and University of Washington.

Dynamic library programs in new media are directly related to the leadership of the people who direct them. Great librarians of the past have had greatness of spirit, the pioneering instinct, creative initiative and courage. Currently there is a large group of librarians who have the same high dedication and personal commitment to, zeal for and pride in librarianship with its many concepts for the future. Some of these leaders in new media development are: David Clift, Margaret Rufsvold, Louis Shores, Sarah Srygley, Walter Stone, Alice Lohrer, Irving Lieberman, Frances Henne, Leila Doyle, Cora Paul Boma Ralph Shaw, Esther Burrin, Rachel de Angelo, Grace Stevenson, Clarence Graham, Jack

Moriarty, Ed Heiliger, Muriel Javelin, Maryan Reynolds, Karline Brown, Margaret Nicholson, Frances Hatfield, Jesse Shera, Dorothy Crosland, Ray Swank, Mary Louise Mann, Naomi Hokanson, Mary Frances Johnson, Gertrude Coward, Ruth Davies, Virginia McJenkin, Lura Crawford, Ben Evans, Ed Schofield, Jean Crabtree, Ralph McCoy, George Bonn, John Harvey, C. Dake Gull, Richard Angell, William Locke, Foster Morhardt, Ralph Severance and a host of others.

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EDUCATION AND TRAINING OF THE FILM PRODUCTION SPECIALIST

John H. Moriarty
Purdue University

Introduction

Brief comments which are all that can be given here on education or even training for the educational media specialist should probably admit that in current American practice an educational specialist of whatever kind should begin as a teacher first with education and even better, experience as a teacher, and only then add specialization with further education and training to attain top quality as a specialist. The other way around where a specialist attempts to aid teachers, often subjects these specialists to the suspicion, "He is impractical", and let's admit it, often with good grounds. It is also true that the teacher, tackling a specialization without further or with inadequate education and training in the special area brings out the comment, "He is an amateur".

Nowhere are these realities more instantly spotted by all concerned than in film production. It has been "cracked" that all Americans feel themselves "experts in education" and certainly as a population they have been for fifty years saturated in "movie viewing" So your educational media specialist venturing to use films faces groups of learners sharply critical of his methods.

The education and training situation for American student teachers fosters a sense of responsibility to know some psychology and some "nuts and bolts" architecture for school purposes; "methods" courses are strongly content oriented. The student starts teaching them with a desire to know more psychology, to know more about buildings (if inclined toward administration), more subject matter. He is rarely, very rarely made to feel "medium" concerned. If in the better education schools, probably as a graduate student, he is introduced to "audio-visual aids" as educational problems, frequently his professors are somewhat awkward or unskilled in use, and any desire for specialization along audio-visual lines he finds takes him elsewhere into another academic department. And with all the opportunities that exist in the standard educational careers, the young teacher is understandably often reluctant to transfer out.

Current American Higher Education in Film Production

What the education major finds, when he takes the big step and does transfer, is that he can pick from perhaps a dozen universities. These have been described by John H. Tyc in the September 1962 issue of the Society for Motion Picture Engineers' Journal (p.648f This article is an abridgement of his doctoral dissertation at Indiana University (1961) Similar information from another point of view will shortly be available from the Univer sity Film Foundation's survey of film production capacities and personnel in American Universities (with Don Williams, Director AV Center of Kansas City University, as chief investigator). The U. S. Office of Education, Educational Media Branch, sponsored this. These descriptions of institutions and their aims make it very clear that the education major, except in one instance, is bound to meet fellow students more interested in motion picture technical skills, pictorial imagery, drama, speech, journalistic effects and but slightly if at all in what happens in classrooms.

This situation is inevitable enough when the university administrative setups are reviewed to study how the various film instruction units are attached. The two most complete academic programs, at the University of Southern California and at University of California at Los Angeles, are in the Division of Communications (College of Letters, Arts and Sciences) and in the Theater Arts Departments respectively. The other California program is at Stanford, a Radio, TV, and Film Department, in the school of Speech and Drama. On the East Coast, the motion picture production courses at Boston and New York Universities are in "communication" schools, the first in a Division of Communication Art, reporting to a School of Public Relations and Communications; the second in a Department of TV, Motion Picture, and Radio of NYU's Communication Arts group. Columbia University has film production courses under its Program in the Arts, where for instance, a limited number of candidates for the MFA degree in motion picture and broadcasting are accepted. City College of New York has a Film Institute in the Department of Speech (of the College of Liberal Arts and Sciences). Syracuse University has a program now in transition but does give two 3-hour courses in straight motion picture production taught by Audio-Visual Center staff, but with "education" credit.

Farther south, Bob Jones University offers a bachelor's and master's degree in cinema and a MFA degree with major emphasis in cinema. For its unique purpose, the religious missionary film, this institution is remarkably equipped. Miami University combines film with radio and television into a Department of Radio, Television and Film. The University emphasizes that practical experience in a commercial setting is afforded its students by a required internship at the senior level.

In the middle of the continent, Northwestern University follows the East Coast pattern in having its film courses given by a Department of Radio, Television and Film in its School of Speech. It is in the Midwest at Indiana University, that a rare education bias is found. Motion picture production in a complete sequence of 20 semester hours is offered in courses sponsored by the Audio-Visual Center with a faculty on joint appointment by the Center and the School of Education. Production courses are available for the undergraduate, and in the Graduate School for master's degree and as part of specialists' degrees, as well as credited as a minor toward the doctoral degree, in the Graduate Division of the School of Education or even in the Graduate School.

Besides these institutions, probably three dozen or so others offer film courses of some kind. The Curriculum Committee of the University Film Producers Association has surveyed these from time to time. The latest survey reported at the August 20, 1962 Annual Business Meeting involved questionnaires to 100 universities and copies of the tabulated results are to be sent to all UFPA members by Mr. Don Cain, Audio-Visual Education Service, University of Minnesota. The gist of these surveys and considerable detail on the aims and ideas of cinema training generally available in the United States are given in the UFPA Journal, Volume 14, No. 4, Winter 1962 issue. Earlier but still current descriptions are in the Journal, Volume 11, No. 2, Winter issue 1959, and Volume 13, No. 3, Spring issue, 1961.

The Educator as Film Specialist

Faced only with such opportunities American schoolmen have generally not made film production a common educational specialization integrated closely with normal classroom pedagogy. They have used film in education very much as do any of the other professional groups taking just such opportunities to adapt and exploit it as they have come across one way or another. As noted, these education majors who ventured into the cinema schools described above found the concerns of the faculty and most students in them were for the entertainment or advertising effects of film, for the artistic and emotional impacts rather than the "pedestrian", "bread and butter" lessons that are the day-to-day needs of schools. Art and emotion can serve educational purposes, of course, but in the main only indirectly. So that while the University of Southern California as early as 1932 offered a degree in cinema, the concept that the educator should make his own films was as late as 1962 a pioneering one. Professor Louis Forsdale of the English Department, Teachers College, Columbia University, made a report on such film making to the Society of Motion Picture and Television Engineers at the Society's Convention, October 3, 1961 (printed in the September 1962 issue of the Society's Journal p.658ff). The rarity of film production by educators is emphasized by a quote from the first paragraph of this report: "Teachers and students have been making motion pictures occasionally here and there for years, but now the practice should become widespread in local schools." The title of Professor Forsdale's report is: "Schools Make 8mm Sound Motion Pictures". His belief is that due to the low cost of 8mm equipment and film, and the ease of operating it "for the first time the opportunity to make sound films is realistic for teachers and students in schools where film making was unheard of yesterday." Whether Professor Forsdale's optimism about teachers' significant self-service with motion pictures can come about through 8mm film exploitation will prove out only in practice. It is true that most significant educational "leaps" forward in the past have had some technological base. Perhaps this 8mm development will prove the base for teacher specialization in motion picture production. Schools of education across the country could well "stick their necks out" for the capital outlay which such equipment would entail and initially bring in AV people to teach its use, at least until education majors themselves can take over the future instruction.

Part II - L

THE PREPARATION OF THE EDUCATIONAL TELEVISION SPECIALIST

Warren F. Seibert
Purdue University

> Despite a profound skepticism widely shared at the outset within the committee...a fundamental reluctance to encourage an adventure... which is not only untested in our own indigenous educational practices but is...largely untested...in the entire sphere of American education; despite the difficulties of pinning down many of the facts, to say nothing of the issues, and despite knowledge of the very considerable outlay of funds and manpower inevitably involved, the committee has come gradually to the conclusion that the potentials of television in education...are so enormous that it is likely that no institution of higher learning will in the future be regarded as fully capable of realizing its purposes without having in some fashion made this instrument its servant.

The reader may wonder why the foregoing quote was chosen to begin this paper. Rather than obscure the point, we will suggest that thoughts such as those above, which come from a Dartmouth College committee (and are reported in *Educational Record* for October, 1954) form a significant base for the present problem. If views similar to those of the Dartmouth committee had not emerged and had not been acted upon in the past decade, the training of ETV personnel would not merit your attention nor the preparation of this paper.

It has been ten years since KUHT, the first of the educational television stations, began operations in Houston. That station has now been joined by almost seventy sister stations which together serve virtually all major metropolitan areas and a growing number of smaller communities. In addition, closed-circuit instructional television has grown and continues to grow at a rate which defies accurate tabulation. The most conservative estimate would claim that there are three hundred closed-circuit installations in education. Other estimates would double the figure, yet we doubt that anyone has either the ability or the determination to make a full count. Whatever the present count, it does not appear that the expansion has ceased.

Much that is worth quoting and which deals with the preparation and need for ETV personnel is to be found in two publications. These are the *Directory of College courses in Radio and Television: School Year 1961-1962* and *Educational Television: The Next Ten Years*. The first publication represents the work of Patricia Hamill and Gertrude Broderick, published by the U. S. Office of Education, and the second has been edited by Wilbur Schramm and published by the Institute for Communication Research, Stanford University.

It should be stated that the first of the publications lists and summarizes many course offerings, institution by institution, which usefully describe the present preparation of ETV personnel. The institutions which now serve as a training ground for the personnel of ETV are well represented within the book. And although 300 colleges and universities qualified for inclusion within the Hamill and Broderick compilation, only a portion of these would be significant sources of trained personnel. Only 113 grant degrees in some phase of radio-television broadcasting and 21 institutions report a program leading to the Ph.D.

The variety of courses and experience which lead to professional work in educational television almost defies categorizing and yet they must be separable. Certainly, in speaking of the "ideal" ETB staff member we must be realistic enough not to describe the universal man. Or, as happened at one conference, we must not describe a station staff entirely composed of people who would qualify as full professors on any major university campus. It is just possible that cameramen, technicians, floor managers, and film librarians can perform well without delving into the deeper mysteries of mass media and the teaching-learning process.

As with educational film production, the professional in ETV must surely be an educator first. But to render useful service, he must also be well versed in the uses and limits of his medium. In present curricula, this second goal is sought in courses such as the following: mass communications, broadcasting law, television writing, announcing, directing, engineering principles, television production, station management-operation, media research methods and results, broadcasting and the public interest, dramatic production.

Good programs of training, though surely not ideal, are to be found at institutions such as University of California at Los Angeles, University of Illinois, the State University of Iowa, Michigan State University, University of Minnesota, University of Missouri, New York University, Ohio State University, University of Southern California, Syracuse University, and University of Wisconsin. Their programs cannot be regarded as ideal simply because our knowledge both of television and of education is far too limited to give basis for such an extreme appraisal. It may also be noted that television, like education, breeds "instant authorities." Not only are all of us perceptive consumers of education, hence, authorities on education, but almost all are perceptive consumers of television (we think), hence we are not reluctant to impose our judgments on others. This paper may be object proof of both points. But in such matters, it is good to recall the words of Alexander Pope: "'Tis with our judgments as our watches, none go just alike, yet each believes his own."

A few words should also be said about the continuing education and upgrading of ETV personnel. As in many fields, the arrangements for achieving this with ETV personnel are somewhat limited. Elaborate up-grading and up-dating procedures, such as those in medical fields, do not exist. Neither is there the extensive and effective system which now serves to improve agricultural practice. Nevertheless, the ETV professional is presented with opportunities for continuing improvement. The National Association of Educational Broadcasters, through its Journal (which includes research reports and abstracts), its Newsletter, its annual meeting, its regional meetings, and through special seminars or workshops, presents many opportunities for ETV personnel to keep abreast of new thinking and new practices. Also, the Association provides outlets for persons who wish to contribute to the growth of the profession.

As Nelson points out in his chapter from the Schramm book, a minimum ETV operation requires a staff equivalent to about seventeen full-time persons; half of them might be regarded as ETV "professionals." For full-blown operation of a major station, a staff equivalent to fifty full-time people is needed. Again, roughly half of the personne are professionals. To get some insight into the nature of training which these professionals must have, position titles from Nelson's personnel roster can be cited. They include the following: station manager, program director, special projects manager, production manager, chief engineer, engineering staff, writer-producer, director-producer, director, continuity writer, in-school coordinator, staging and lighting, graphic artis, research assistant-music librarian, promotion-community school relations, announcer-newscaster, film supervisor-photographer, film editor, and film librarian.

Later in the Schramm book, Maloney and Donner discuss future needs for ETV personnel. They suggest that we may have 100 or even 200 ETV stations by 1971. Their projections contrast sharply with the figures given by Vernon Broson, et al. in The Needs of Education for Television Channel Allocations (U. S. Office of Education, 1962). Bronson's report, based on a survey which the National Association of Educational Broadcasters conducted, states that "...the projected minimum number of television channels is well over a thousand...or more than are presently available in the FCC's Table of Assignments." We cannot know whose projections will be best supported by the facts, gathered ten or twenty years from now, yet it can be predicted that new stations will continue to emerge so long as usable spectrum space is available to them. With each new station (or closed-circuit facility) we will be required to find a staff who can make the facility serve the legitimate purposes of education.

Although this paper is already seeded with several of the writer's views concerning the preparation of ETV personnel, it has still more to add. First, we would stress the point that the television specialist, to perform well, must surely be conversant with the procedures and practices of educators. He cannot thrust new purposes upon the educator, but must instead understand purposes which the educator holds dear and be able to work with these. Second, ETV personnel must know the uses and effects of their medium. This is of course often stated, yet it bears repeating, with a twist. There is the tendency to learn the medium in commercial terms and the related tendency to use it always dramatically, artistically, aesthetically. As with textbooks, the preparer of television productions may be more intent on the applause of his peers and colleagues than on the educational effects upon his audience. Finally, although this listing could extend for many pages, the educational television specialist must have the abilities of a diplomat, a counselor, a wise consultant. Placed as he often is between message-bearers and receivers, he must know the ways and have the patience to bring the two together.

In closing, it should now be obvious that this paper could only touch on an infinitely small sample of the things which might be said on the chosen topic. Clearly, though, when we talk about the preparation of personnel to staff ETV, we are concerned with people in an expanding field; in a field that is dimly understood; in a field that employs only a few hundreds yet affects millions; and obviously a field which demands ability, willingness to learn, and a high sense of responsibility.

PART II - M

ENTRY INTO THE PROFESSION BY THE AUDIOVISUAL EDUCATION MEDIA SPECIALIST

Fred F. Harcleroad
California State College at Hayward

In the first issue of the A-V Communication Review, published in 1953, James Finn delineated six main criteria which typified a profession. They were: (1) An intellectual technique; (2) An application of that technique to the practical affairs of men; (3) A period of long training; (4) A close-knit association of members, with a high quality of communication between them; (5) A series of standards and an enforced statement of ethics; (6) An organized body of intellectual theory constantly expanding by research. More recently, the Educational Policies Commission of the National Education Association has published a statement which is called "Professional Organizations in American Education" with another comparable list of the criteria by which to determine a profession. The one big difference emphasized in the publication of the Educational Policies Commission and that developed by Dr. Finn is a seventh point; (7) Active influence on public policy in its field. These categories, or criteria, seem to be adequate to use in measurement of any particular field to determine its right to be called a "profession."

The work which is done by the people who are called Audiovisual Specialists or Educational Media Specialists is quite broad and comprehensive. Analysis of this group of people and a comparison of this analysis with the seven suggested criteria indicate a high degree of accomplishment in certain of the criteria, probably the first and second and possibly the fourth and fifth. In the area of the third and sixth criteria, and the seventh criteria listed by the Educational Policies Commission, the Audiovisual Specialists group have a considerable distance to travel. This paper, and the entire project of which it is a part, are an indication that work is proceeding toward professionalization in these other important criteria.

The Occupational Outlook Handbook published by the Bureau of Labor Statistics of the United States Department of Labor, provides a rather careful resume of the educational programs required of many occupations and professions. In this volume I have checked the educational requirements, and characteristics of the educational program, for the following fields or professions: (1) Medicine, (2) Dentistry, (3) Pharmacy, (4) Medical Technology, (5) Engineering, (6) Accounting, (7) Law and Teaching. Seven major characteristics were apparent from this investigation. 1) The basic undergraduate pattern for all of the professions varies between two and four years, with specific required courses included in this undergraduate program. 2) In four of these fields, advanced work is required in a professional school after completion of the undergraduate pattern, for a total of 6 or 7 years of college and university work. 3) The program must be accredited by the specific professional association for that field. Many of these requirements have been established in State law as a result of the work of the professional association. 4) A special professional degree is often given. 5) The initial right to practice the profession usually comes from an examination which follows the degree. 6) In some fashion, practical or clinical work is always required before a final certificate and examination are given. 7) Additional education in a specialty with specific practice (internship) in it and with a special certificate at the end of this specialized

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education, are a part of many of the professions.

Entry Into Recognized Professions

This paper deals primarily with initial entry into the profession and will relate only briefly to the advanced program. However, before discussing entry into the profession for Audiovisual or Media Specialists, it may be helpful to describe briefly the practices in the other seven professional groups named above.

First, in the medical profession, students typically take a four year undergraduate degree program before transferring to the professional school of medicine. A few people transfer at the end of three years. Following transfer, they go through at least an additional four years in the professional school, with much of it in clinical practice in the hospital school of medicine. Next, they go into full internship which is followed by examination and the securing of the license to practice. Thus, in the medical profession, a student finishes nine years of preparation before he can start to practice - and finally enter his profession. If he wishes to go on and become a specialist, he may take as many as four more years to become a fellow of the various specialized groups in the medical field.

In dentistry, three years of pre-professional work and three years of professional work are more typical. The last year or year and one-half are almost always of a practical internship type. Following completion of this program and an examination, the candidate secures the license and goes out to practice. After initial entry into the profession at the end of six or seven years, he can return for further specialization--normally taking another three years.

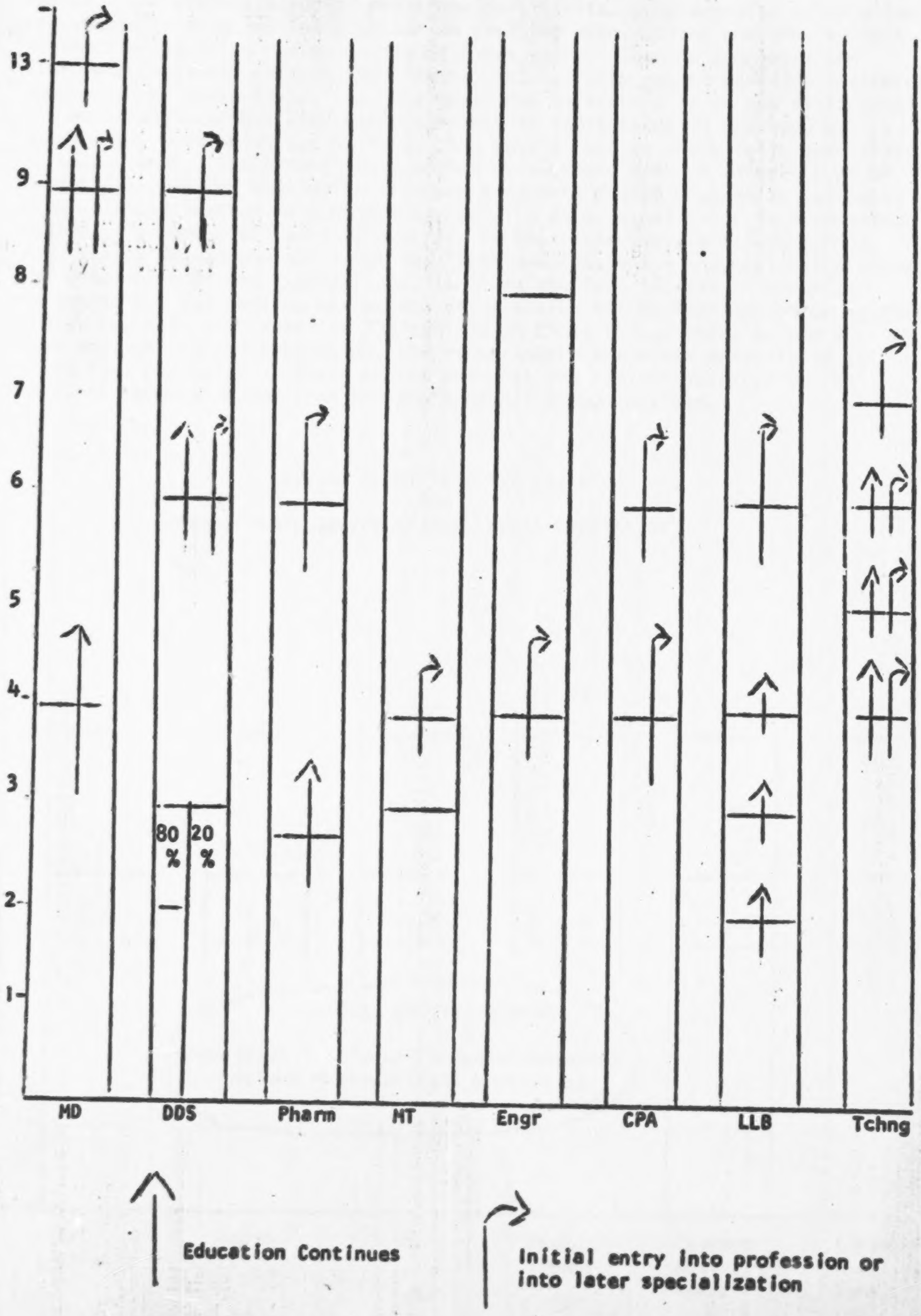
In pharmacy and medical technology, the period of educational work is shorter but the same principles prevail. Pharmacy school of at least two and possibly three years follows at least three and possibly four years of undergraduate baccalaureate education. In medical technology, the program is at least four, and sometimes five, years in length with the baccalaureate degree usually completed at the end of four years.

Included in both the pharmacy and medical technology programs, there is an internship under careful supervision, followed by a thorough examination, the granting of a license and entry into the practice of the profession.

Entry into the legal profession is quite comparable with entry into the profession of dentistry. The student can finish the undergraduate program with the baccalaureate degree in the arts and then continue for a three year period in the law school. Some students enter law school at the end of the sophomore or junior years, but all will attend a total of six years of college in order to secure a degree from an accredited institution. If he transfers at the end of the baccalaureate degree program, he will usually have to take a three year professional program - making a total of seven years in all. Following the completion of professional school, the candidate takes the bar examinations - and upon successful passage of the examination secures his license and is allowed to practice his profession.

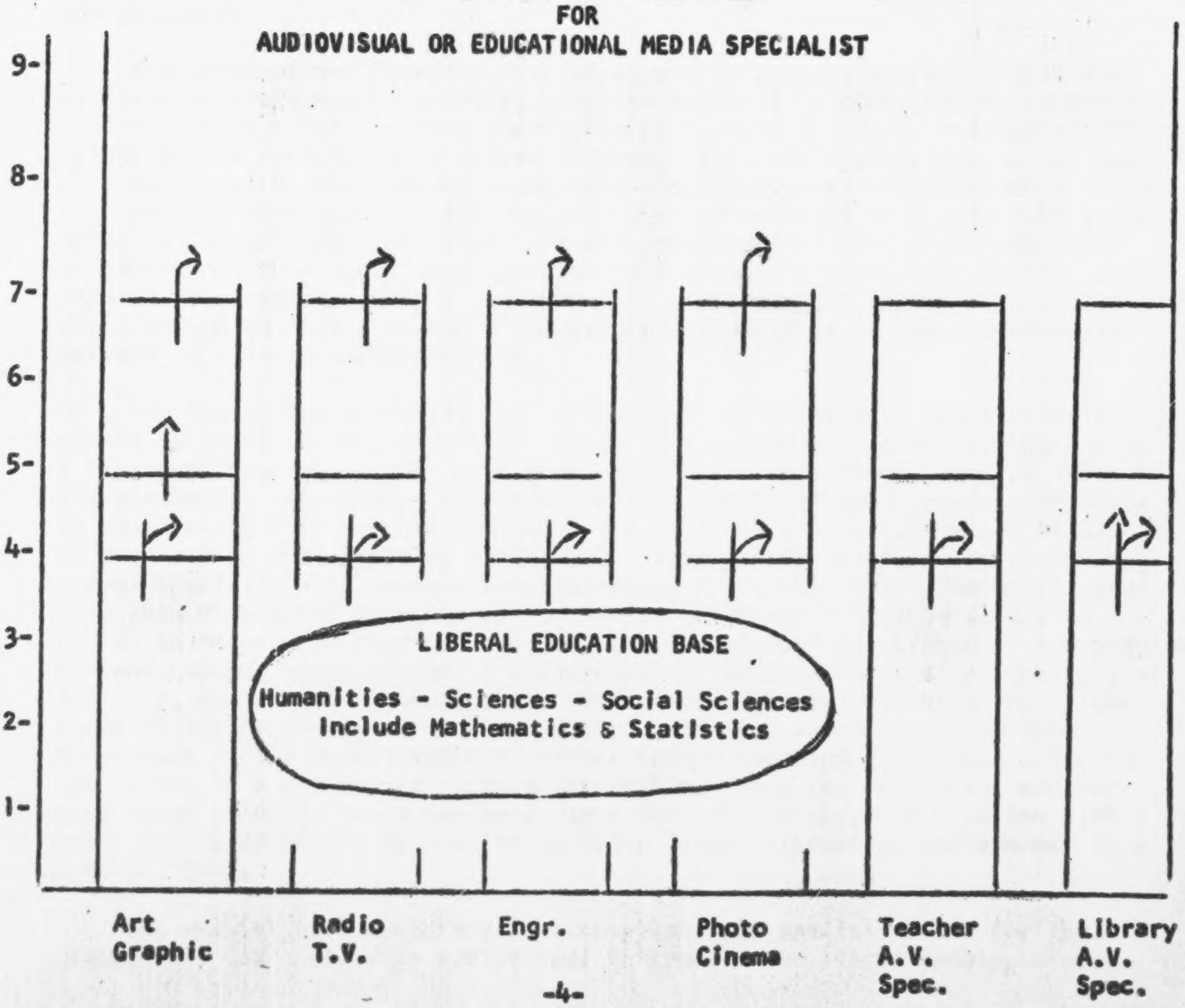
Engineering and accounting are different from any of the other professional groups previously described. In the case of engineering, the student is allowed to carry on initial practice following the completion of his baccalaureate

PROFESSIONAL DEGREES & LICENSES



degree - and without securing the final certificate. The practice is to allow the person to take initial engineer-in-training examinations and then to work in engineering for a period of two or three years. Then he completes the final examinations, secures the license, and is fully set to practice following completion of these exams. In this case, the internship is in the field working as an engineer but with certain specified limitations on the type of engineering work which can be done. The same situation prevails in many places in accountancy. The person can practice accountancy with an interim type of certificate, at the conclusion of a baccalaureate degree program in business with a specialization in accountancy, or with an original major in accounting. Following a number of years of practice in the field (anywhere from two to four years) the accountant takes the "CPA" examinations - and, following successful completion of the examinations, is given the full license to practice accountancy. Once again, the person can practice his profession following the degree but with very specific limitations on those things which he can do. In both engineering and accounting, the requirements are often established in state law, monitored by State boards and with regulations accepted on the basis of recommendation from the professional group involved.

INITIAL ENTRY INTO THE FIELD
FOR
AUDIOVISUAL OR EDUCATIONAL MEDIA SPECIALIST


9-
8-
7-
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1-
LIBERAL EDUCATION BASE
Humanities - Sciences - Social Sciences
Include Mathematics & Statistics
Art Graphic
Radio T.V.
Engr.
Photo Cinema
Teacher A.V. Spec.
Library A.V. Spec.

Proposed Program for Audiovisual-Educational Media Specialists

I propose that the Audiovisual-Educational Media Profession should adopt and definitely work to develop a professional pattern similar to that in use in the field of engineering and accounting.

Initial entry into the profession should be based upon the baccalaureate degree and initial competence in one of the key areas found in the field of materials and instruction. People from several different types of backgrounds will be needed for initial entry into the profession. Persons are needed for specialization and work in (1) the area of graphics (including artistic work and photographic work); (2) the field of engineering and recording, with real competence in electronics; and (3) in the field of teaching, with competence and understanding necessary to be Audiovisual building coordinators in high schools, elementary schools, and possibly even small junior colleges. People in this last group may come from (4) the field of librarianship as it is in existence today or (5) the field of Audiovisual instruction as it is now made available as a minor field at such places as the University of Indiana. In any of these specialized fields, a person may major in the field with the idea of teaching it in the public schools of the country or it may be taken as a minor field to go with almost any content field which needs to be taught in the secondary schools.

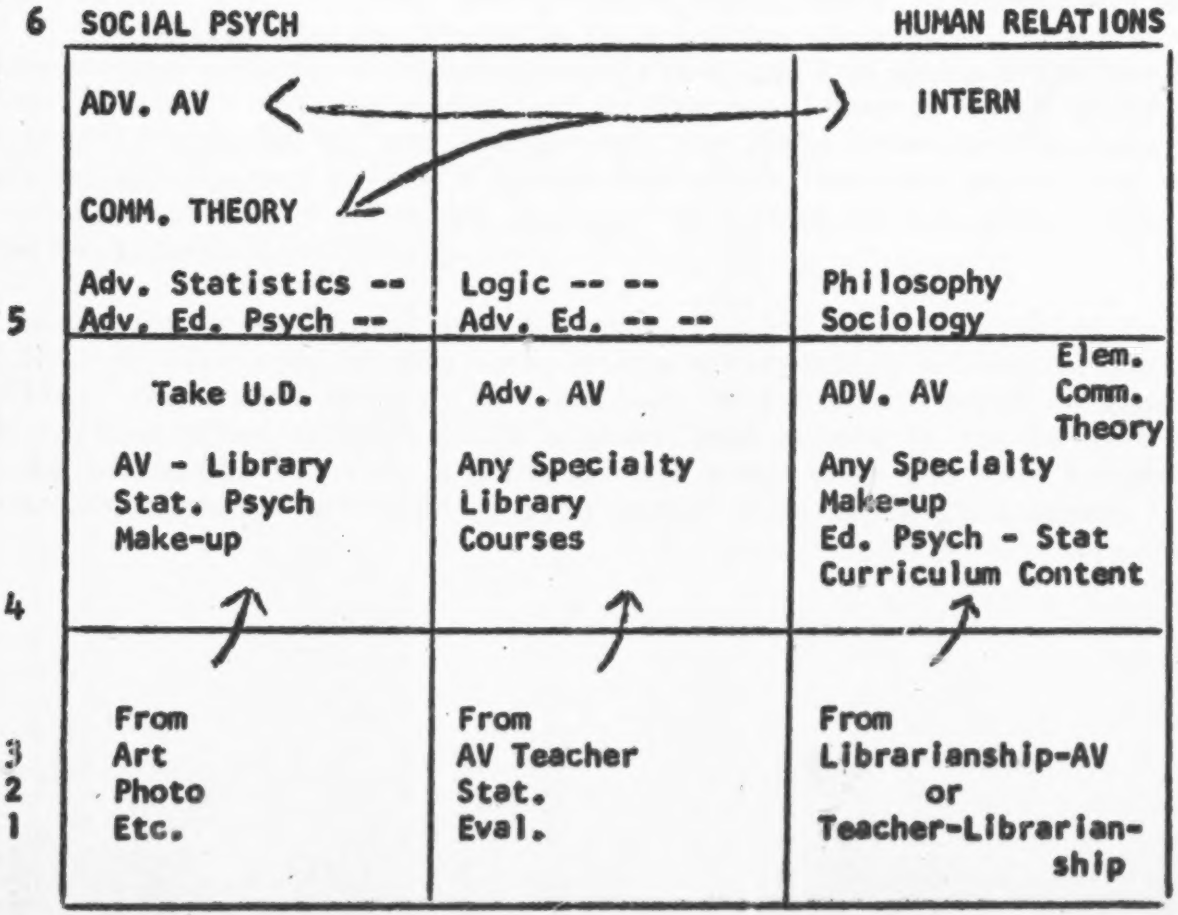
A problem arises immediately with regard to persons who are highly specialized in electronics, artwork, graphics production, photography, cinema and similar fields - but who have journeyman background or junior college education rather than a baccalaureate degree program. It seems appropriate to suggest that people with this type of background are inadequately prepared to proceed into professional work and must take further educational work before they can actually "enter" the profession. At the journeyman or junior college level of education, they would seem destined to remain in the position without much hope of advancement - unless the number of photographers needed in a center is great enough so that a person might become a supervisor of the photographic workers in a large service center.

Continuing the proposal, the logical initial entry into the profession should be based on the credential issued to a beginning teacher at the end of a four year degree program, with some specialization allowing them to teach in the elementary, secondary, or junior college levels of their particular state. In addition to this specialization, the equivalent of a strong minor should be required in what could be called the librarianship specialty or the audiovisual specialty with certain courses common for either one. The entire program should be based on a liberal education which would include skills in social sciences, the physical sciences and the biological sciences. The program for any teacher would include a background in the principles of psychology, of learning, and of human development. There should be an understanding of the place of public education in our society. Finally, there should be some experience in the public schools, either intern teaching experience prior to the degree or a post-baccalaureate internship. In a few instances, and for very large schools, there may be a place for initial entry of a person with a major in librarianship or a major in audiovisual instruction and a minor in a content field.

The special work necessary to accomplish this specialization for the teacher, or for a major in audiovisual instruction or librarianship, should become the post-baccalaureate degree requirements for any person in the arts, graphic work, radio, television, engineering, photography, or cinematography who wishes to continue beyond his initial specialization and become an advanced specialist in audiovisual instruction or media specialist work. For people who have taken the baccalaureate degree in these adjunct fields, but without preparation for teaching in them, this would normally mean an additional graduate year. After this fifth year he would be equivalent in his background field with the A-V specialist or Librarianship specialist, or the teacher specialist with the minor in A-V or library work.

On the other hand, the person who has a specialization as a teacher in a field other than art or science (with experience in radio, electronics and TV) needs to acquire as a part of his graduate work, some degree of competence and specialization in one of these other fields. Thus, at the end of a five year period, persons entering from any one of these six or seven areas should be roughly equivalent in background but with slightly different specializations. In any of these areas, there should be some emphasis on work in statistics and evaluation in order to make it possible for the person - from whatever field he may come - to be highly skilled in the analysis of materials and the statistical and evaluative tools necessary to make these evaluations.

POST DEGREE PROGRAMS



6	SOCIAL PSYCH		HUMAN RELATIONS
	ADV. AV COMM. THEORY Adv. Statistics -- Adv. Ed. Psych --	Logic -- -- Adv. Ed. -- --	INTERN Philosophy Sociology
5	Take U.D. AV - Library Stat. Psych Make-up	Adv. AV Any Specialty Library Courses	ADV. AV Elem. Comm. Theory Any Specialty Make-up Ed. Psych - Stat Curriculum Content
4			
3 2 1	From Art Photo Etc.	From AV Teacher Stat. Eval.	From Librarianship-AV or Teacher-Librarianship

At the end of this five-year period, a person from any one of these various specialized fields should be ready to take position of more responsibility than that of building coordinator of a single school. Thus, entry into an advanced stage of the profession would be based on additional work beyond the baccalaureate degree - the exact content of which depends upon the deficiencies which may occur because of a given person's undergraduate program. Beyond the fifth year, people should be able to take the additional work in advanced educational psychology, advanced statistics, advanced educational sociology and philosophy, logic and communication theory which is necessary to prepare them for positions of broader responsibility and of important leadership in educational systems - be they city, county, state or nation. For positions of extreme responsibility of a national or state-wide nature, or for positions of instruction in colleges and universities, the doctoral work necessary in the seventh year of collegiate or university education should be the norm.

During the fourth year for people taking the library A-V specialization and the fifth year for any other persons, there should be some organized, concentrated paper or thesis developed showing insight into the rationale of instructional materials and their use in furthering the education of the youth and adults of our country. At the Master's level and at the doctorate level, increasingly thorough study should be expected of people in this field.

Obviously, this proposal regarding entry into the profession, and later entry into more responsible positions in the profession, lacks one of the vital ingredients present in the work of the engineer and of the accountant. The only certificate suggested above is the initial teaching certificate necessary to teach in the public schools at the end of the baccalaureate degree program. At the present time, the standard requirement in almost all of the states of the United States, to serve as a teacher in a public school, is a four year degree program with an appropriate major and appropriate professional education. This is not the equivalent of the requirements which prevail in most states in engineering and accounting. In these other professions, an examination is required before a person can obtain initial entry into the field - and a further examination is required before he can obtain final certification or licensure.

If education is to become a profession, it will have to proceed to this step. This is also true of the work of the audiovisual, or educational media, specialist. There will have to be some type of licensure based on examination for the various types of work to be accomplished before it can be said that this group of people is truly a professional group with the same standard as the other professions described in some detail earlier in this paper.

PART III

THE SEMINARS

LIMITING THE PROBLEM

REACTIONS TO THE WORKING PAPERS

AREAS OF CONTINUING CONCERN

CONCLUSIONS AND RECOMMENDATIONS

PART III - A

LIMITING THE PROBLEM

The past 40 years have seen a rapid growth in the use of instructional materials and expansion in the variety of new educational media in education and training programs. At best, in the early years, the personnel for supervision and management of the newer media resources were recruited from areas of related interest. At worst, they were drawn into the field merely to fill a vacuum. Gradually there developed a more or less specific content; various statements of theoretical positions which underlay the new media field; various hypotheses which were tested by research of widely different reliability and validity; and various specialities of function. The complexity of the field led to the establishment of training programs in colleges and universities which were designed either to train for one of these specialities, or to propagate a point of view about audiovisual or new media education.

It seemed reasonable to expect, at some point in the development of the field, that a carefully selected, diversified group of people could describe the content and pattern for the training of audiovisual specialists. Obviously the seminars were faced with many related questions which arose during the discussion of the content and pattern of programs. Nevertheless, the chances that a group could reach consensus seemed better if the problem discussed was carefully circumscribed. For this reason, certain areas were arbitrarily excluded, even though, in the long run, they would be important in the total picture of personnel working in the new media.

For example, the question of the number of personnel needed in the field was by-passed. It was assumed that since an estimate by the

NAEB indicated the need for over 100 Station Managers in the next ten years and since the employment requests at Indiana, University of Southern California and Columbia total approximately 125 for the year 1963-64, any additional documentation of requests would not affect the basic problem of the need for a training program.

The same point of view was taken regarding questions of recruitment. This was an important problem but was kept outside the limits of concern for the seminars.

The participants found it more difficult to exclude the questions of accreditation and enforcement of standards. These two questions are so intimately related to the establishment of training programs that the participants continually reminded themselves that consensus should be reached on the content and pattern of the program itself before discussion was appropriate regarding accreditation and enforcement. It is hoped that future seminars or commissions will deal directly with these aspects of the problem.

Another most confusing area dealt with terminology and definitions. The historical confusions surrounding the use of the words "audiovisual" and "communication" were distressingly evident throughout the discussion. All three of the seminars considered the work of the DAVI Commission on Definitions and Terminology and then proceeded, without agreement, to use the terms loosely as seemed most appropriate to the discussion of the moment.

This report, therefore, deals primarily with the effort to gain consensus, by members of the three seminars on the content and pattern for the professional training of educational media? audiovisual? communications? instructional materials? specialists.

PART III - B

REACTIONS TO THE WORKING PAPERS

The seminar participants recognized that it would have been impossible to draw papers covering all pertinent questions related to the content and pattern of training of the audiovisual communication specialist. There was logic in the selection of papers as proposed by the Advisory Committee. The papers were selected from three large categories which the committee felt embraced the field. These categories were:

(1) The historical, audiovisual areas where formally organized classwork is generally available in the more established training programs. These were the papers by Brown, Fleming and Schuller.

(2) The more recent areas where new orientations or ideas are pressing for accommodation and in which the established training programs are considering establishing, or are experimenting with, class work. These are the papers by Gerbner, Silvern, Stolurow, and Norberg.

(3) Papers on the background and/or status of training programs in other media fields which would help point up the problems in 1 and 2 above. These were papers by Worland, Whitenack, Moriarty, Seibert, and Harcleroad.

Several of the seminar participants suggested other titles but there was general agreement that any minor variations on the list of titles would not measurably have altered the purposes which the papers served for the seminars.

The most serious criticism of the papers as a whole was that they "lacked an integrated concept", that is, a conceptual umbrella under which the various programs fit. As the seminars progressed, it became apparent that this lack of an integrating concept was as true for the thinking of the participants as it was for the writers of the papers, and was a major obstacle in reaching consensus. This reaction regarding the lack of an integrated concept was offset in part by a reaction that the papers were the best assessment of the problem available. Obviously both of these positions could be held by the same persons -- and were.

From the point of view of the project staff, the discussion engendered by the papers was one of the most hopeful outcomes of the seminars. The tradition of "position papers" as the basis for discussion of professional problems is being continued within the professional organization (DAVI) -- and the twelve papers developed for the seminars are one of the major contributions of the project.

From the point of view of the project staff, it was interesting to note that general acceptance of the papers was almost directly related to the length of time the field has had to accommodate the problems discussed. The papers of Brown, Schuller and Fleming, dealing with the areas in which programs have historical tradition, were less criticized than papers in newer areas written by Gerbner, Silvern and Stolurow.

PART III - C

AREAS OF CONTINUING CONCERN

Two themes which occurred again and again in the transcript of the discussion of the seminars were the place of "general education", and the place of "social values" in the life of the audiovisual communication specialist. No technical area was discussed long before either one or both of these topics was inserted in the discussion.

The participants recognized that the problem of the amount and kind of general education needed in an era of specialization is not entirely within the control of curriculum makers. For example, the age of a person's entry into a field is partly an economic question. Likewise, the type and amount of general education will vary enormously in the undergraduate program of the five or six specialized entry fields of the media profession. The graduate programs training audiovisual communication specialists will need to provide enough flexibility to accommodate this wide variation and make it possible for advisors and students to consider this important need in development of beginning graduate programs and doctoral programs.

Many seminar participants were gravely concerned about the "social responsibility" of media specialists. They emphasized time after time the fact that the media specialist cannot be a "transmission belt" but must be an actual participant in the value judgments which are implicit in this field.

Another area of continuing concern was the apparent conflict which is occasioned by the pressures for reform in professional teacher education. Specifically, there is a marked tendency to postpone professional education until the fifth or sixth year in some states and a rejection of "late entry" in other states. The basic teaching credential programs which are pre-baccalaureate in Indiana and post-baccalaureate in California were useful in pointing out the problem of building year by year sequences in the area of audiovisual specialization.

The contribution of psychology, particularly educational psychology, was an enigma to the participants. The paper on psychology was the most difficult to commit. Intuitively the participants felt that psychology must have a major place in the training program, but few would defend specific areas or concepts which would be a "must" in this training program.

All seminar participants were concerned that a statement of a desirable training program might tend to make programs inflexible and not able to accommodate to needed change. Two specific instances of this concern of the need for continued differentiation may serve as examples:

(1) the need for trained persons to serve as "educational engineers" in the planning of physical facilities. This training would perhaps be a supra-doctoral specialty, and

(2) the need for skilled persons to serve as "educational technicians" supporting the work of the teacher in much the same sense that the medical technician supports the work of the doctor. This training would perhaps be a terminal degree in the junior college.

Seminar I was deeply concerned that training programs avoid thinking of the "generalist" (college professors, and system administrators) as a different kind of "specialist." Seminar III was equally concerned that specialists in the technical areas not be excluded from progressing to "generalist."

The generalist vs. specialist discussion inevitably, in each seminar led to a question of the desirebility of manpower studies -- a question outside the immediate scope of the seminars.

PART III - D

CONCLUSIONS AND RECOMMENDATIONS

The project staff was impressed with the commitment and concern of the seminar participants. However, searching for a way, and finding a way are not necessarily accomplished at the same time. The seminars were requested, and funded, on a reasoned conjecture that experience since World War II might have resulted in consensus on the problem of the content and training of the Audiovisual Communication specialists.

The project staff participated in all of the seminars and carefully re-read the transcripts of the seminars. It is obvious from the contributions of the participants that no consensus exists among the thirty-six members of the three seminars either as to the proper content of these training programs or the most appropriate pattern in which the content could be taught. It was impossible to resolve a multitude of problems and hence point to a consensus among the leadership of the field. Nevertheless, the project staff, and the participants, were convinced that the professionalization of the field for the audiovisual communication specialist is closely tied to a more uniform program of training which allows for variability and growth.

It is therefore recommended that:

1. DAVI keep active its Commission of Professionalization
2. Future seminars be held to increase the communication between persons responsible for these training programs.
3. Other projects be originated which approach the problem on the basis of different hypotheses.
4. Theecareful and thoughtful work evidenced in the position papers become a part of the literature of the field through appropriate distribution in professional publications.

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5. DAVI should increase its effort to make the work of the Commission on Definition and Terminology understood, agreed upon, and used by members of the profession. The members of the profession must agree on critical definitions and terms before they can agree on the content and pattern of a training program.

The analogy to medical education was the most frequent analogy used during all three seminars. This analogy implies a relatively common "general" base followed by "specialization". The seminars themselves were established with this hypothesis in mind - the history of medical education as it developed following Flexnor. However, the work of the seminar participants did not support this hypothesis. In all three seminars, the further this analogy was pursued, the less reasonable it appeared as an immediate model for the education of the audio-visual communication specialist. In this field specialization tends to precede, rather than follow, the general theoretical base. This issue was particularly stressed in Seminar III which was devoted to the entry level.

Nevertheless, the transcripts of the seminars would indicate that the analogy to medical education is the eventual direction in which all of the leadership would like to see the field developed "including the implications for standardized curriculum, and accreditation." This point was made continually by most participants at all three of the seminars. The related question of need for further study of the question of the "testing for licensure" was discussed occasionally.

It is recommended that:

1. In the foreseeable future the model for the training of the audiovisual specialist will more nearly be those occupational areas which permit entry into the field on the basis of diverse specialization with the development of a common "general" background together with an appropriate degree of "on-the-job" training.

2. Continuous interchange of program development and aspiration should take place among the limited number of status

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universities offering doctoral level work. In a very real sense, the field will become what the programs of the status institutions decree they should become. Therefore, continuing communication between institutions having doctoral level programs and the DAVI Commission on Professional Preparation, Standards and Ethics is imperative.

3. The Commission on Professional Preparation, Standards and Ethics should begin an immediate study of the problems and possibilities of testing for licensure - at both the entry and full professional level.